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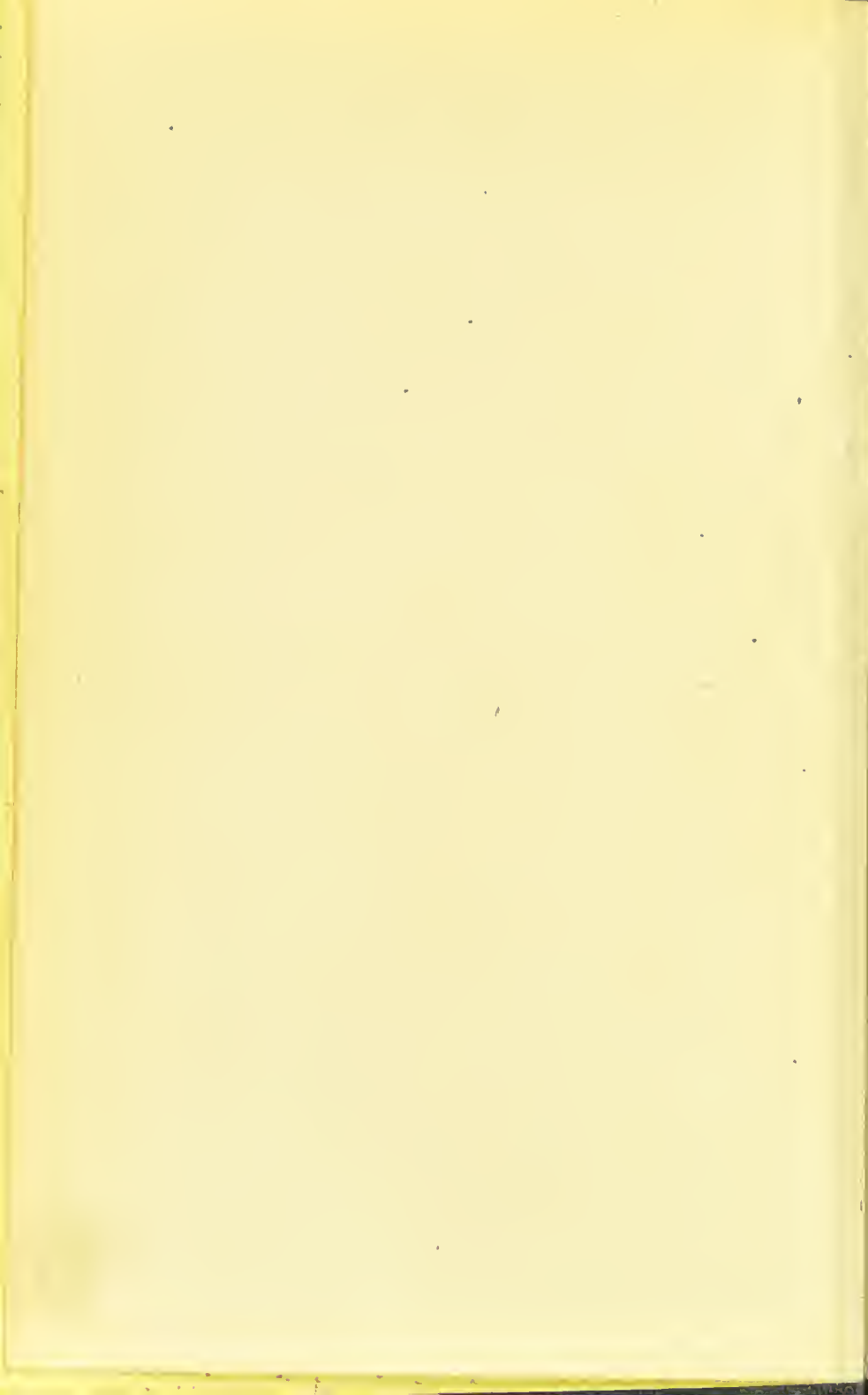
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SURGICAL SUBJECTS

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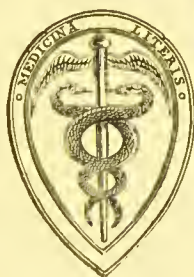
CLINICAL LECTURES ON SURGICAL SUBJECTS

DELIVERED IN
UNIVERSITY COLLEGE HOSPITAL

BY
CHRISTOPHER HEATH

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ENGLAND, EMERITUS PROFESSOR OF CLINICAL SURGERY
IN UNIVERSITY COLLEGE, LONDON, AND CONSULTING
SURGEON TO UNIVERSITY COLLEGE HOSPITAL

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PREFACE.

IN this volume I have collected a second series of the clinical lectures delivered by me in University College Hospital during the last few years, and have included two of the Lane Lectures given by me in the Cooper Medical College, San Francisco, in 1897. I have also added the Hunterian Oration delivered at the Royal College of Surgeons in the same year.

36 CAVENDISH SQUARE,

May 1902.



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ON
ULCERS OF THE LEG

GENTLEMEN,—I propose to-day to speak of a common subject, that of ulcers of the legs; and for the purpose of this lecture I have taken into the wards two or three cases of ulcers of the leg, that you may watch them and see their progress.

Ulcers of the leg are very common, and they are not, perhaps, favourite subjects; but the persons who suffer from them are very grateful to any one who can relieve them. I have here on my watch-chain a pencil-case which was given me by a grateful butler whom I cured of an ulcerated leg; and you will find, when you go into practice, that, if you succeed in curing a leg which has resisted treatment by other persons, you probably will gain a great deal of credit.

Why do legs ulcerate? No doubt some ulcers depend simply upon injury; an accidental knock or scratch, in a person who is somewhat out of health, degenerates into an ulcer. But, on the other hand, ulcers may originate without

any accident ; and one of the commonest causes is, I believe, eczema of the skin of the leg due to slight varicosity of the veins. You know how common varicose veins are, particularly in women ; and you probably know also that a person who has varicose veins has the skin more or less congested. It is not very surprising then that these persons should be liable to eczema, and that eczema be apt to run on into ulceration.

When we have varicose veins going on for years the ulcer is apt to take that form which we know commonly as a varicose ulcer, that is, the parts are more or less congested, the edges are thickened, and the surface of the ulcer in the great majority of chronic cases has very few healthy granulations upon it.

I will show you here a woman who came into the ward a week or two ago with a chronic ulcer. That ulcer, by rest in bed and by simple treatment (which I shall have to allude to directly), has now been converted into a typical healthy ulcer. I show her to you in order that you may see what is the type to which you want to bring all ulcers, namely, a healthy healing ulcer. You will observe that the edges are flat, that the surface is red and covered with florid granulations, which do not bleed very readily. You will find that there is no special pain about the part, and that from

the margins of the ulcer we have an epithelial growth gradually encroaching upon the granulations, and which will eventually close in the ulcer.

Now take the varicose ulcer which I have described, but of which I cannot show you at the present moment a good specimen, and you have there an ulcer which has got to the condition of a chronic disease, and requires to be treated to bring it into a healthy condition. There are various ways of treating chronic ulcer, and among out-patients I do not know any better method than that of strapping the ulcer with ordinary adhesive plaster. The straps should be passed round the leg and crossed over the front, and they should be applied directly upon the ulcer. When the ulcer has been covered over with strapping a bandage should be put over it. The patient can then, unless the discharge is very great, wear the plaster for two or three days, when it should be renewed. The effect of the plaster is to stimulate the surface of the ulcer, and at the same time to produce absorption of the thick edges; the result is, as you may have seen among out-patients, that, after a couple of weeks or so of strapping, the ulcer is in a much more healthy condition than it was before.

But there are ulcers which will not bear

strapping. Some uleers are too irritable; and then a very good plan is, instead of using plaster, to enfold the leg in strips of wet bandage in the same manner as with the plaster; and, of course, over the wet bandage to apply a piece of waterproof material.¹

Let me say in passing, by the way, that here in the hospital we use the ordinary common yellow oiled silk or thin gutta-pereha; but in private praetice you will find that the ordinary green oiled silk of English ehemists is apt to become very disagreeable in a day or two; and I advise you, in the ease of private patients, to use the French oiled silk, which is a yellow opaque material, much pleasanter to apply, and which has the great advantage that it does not become unpleasant in odour after some days' exposure to discharge.

In addition to this strapping with either plaster or bandage for a ehronic ulcer, of course you may apply various forms of stimulant. As I came to the hospital I took the trouble of getting a box of a much advertised ointment, which is said to cure pretty nearly all the diseases under the sun. This box, which cost $13\frac{1}{2}d.$, seems to me to contain an ordinary ointment of a resinous charaeter, and is probably worth about $2d.$ I do not know that it is better than any other ointment, but I do not say that it is worse. It is evidently a slightly

stimulant ointment; and, of course, it has a certain popularity. But there are plenty of ointments in the Pharmacopœia which are quite as good or even better. If you want a stimulating ointment for an ulcer, I do not know that you can do better than use some mild form of mercurial ointment. The Nitrate of Mercury ointment of the Pharmacopœia, well diluted, is extremely useful. The Nitric Oxide or Red Mercurial ointment is a great favourite with prescribing chemists, but in my experience is a great deal too stimulating. You find that patients complain that it burns them, and it certainly does not do their legs good. Then, of course, there are numerous lotions. The ordinary red lotion of the hospital, which consists mainly of Sulphate of Zinc and Tincture of Lavender, is an exceedingly useful application. It has been used in the case of the patient now before you; and you may see that it is worth while in applying it to take a little trouble to do it properly. You may have heard me, going round the ward, tell the dresser to cut a pattern of the size of the ulcer on paper, then to cut his lint exactly of the same size and shape, and, having soaked the lint in the red lotion, to apply it to the surface of the ulcer, and over that and beyond it to put a piece of lint simply dipped in water, over which again a waterproof material is placed.

If you take a little trouble to dress an ulcer properly in that way, it will heal a great deal better and quicker than if you merely cover it over in a rough-and-ready manner with a piece of lint, which is after all, perhaps, not kept wet.

We have, of course, various antiseptic applications which are useful where ulcers are foul to begin with and require cleansing. A weak Carbolic lotion is exceedingly useful. A little Iodoform sprinkled upon the surface of an ulcer is also very beneficial. But where I want to clean an ulcer I generally order an old-fashioned linseed-meal poultice, and have the surface of the poultice sprinkled with Iodoform. If that is applied for a day or two it cleans up an unhealthy ulcer better than any other application I know of.

We come now to what is called the chronic ulcer, sometimes called callous—callous, because it has no action, is perfectly insensitive—and the surface of which is glazed and has few or no granulations upon it. Now that is a condition which has lasted probably for months, perhaps for years; and, in order to bring that ulcer into an active condition, I think there is no better plan than that recommended by the late Professor Syme, namely, to paint it over with blistering fluid. One, or at most two, applications of the *Liquor Epispasticus* of the *Pharmacopœia* will bring about an amount of

activity in an ulcer which will lead to its rapidly granulating, and then, of course, it can be treated as I have already described.

But, on the other hand, there are many ulcers which are *irritable*. About the inner ankle particularly we are apt to have a small irritable ulcer depending apparently upon varicosity of the saphena vein, and that ulcer is excruciatingly painful, keeps the patient awake at night, and leads to great irritation. Now ulcers of that kind, as was shown by the late Mr. Hilton, have occasionally a branch of nerve exposed in a granulation; and the plan that he recommended is certainly a good one, namely, to feel the surface of the ulcer with a probe, and if there is one point at which the patient cries out when it is touched, to snip away the granulation at that spot with a pair of scissors, and thereby to get rid of the branch of nerve. But, failing to find any excessively painful spot, the best treatment I know of for irritable ulcer is a Nitrate of Silver lotion, 2 grains to the ounce, applied upon lint and then covered with a piece of wet dressing. But, in addition to the local treatment, you must give Opium internally. And let me say that, in elderly patients who are suffering from chronic ailments and general weakness of health, doses of Opium given systematically at bed-time have a most beneficial effect, not

merely in procuring sleep, but in acting as a tonic; and you will find, when you have charge in a workhouse of a large number of old patients, that 5 grains of the compound soap pill given at night, or even twice a day, will make these patients very much more comfortable and happy than any amount of stimulants. Opium takes the place of a stimulant, and answers better for the patients.

In these cases, then, of irritable ulcer you apply Nitrate of Silver locally beneath a bandage, and give Opium internally.

There is a patient here from the wards, whom I have brought down to illustrate another form of ulcer which it is most important to recognise, and that is, the tertiary syphilitic ulcer of the leg. When you find a patient with multiple ulcers of the upper part of the leg, and particularly about the knee, with a good deal of induration of the skin and subcutaneous tissue, you may pretty certainly say that it is a tertiary ulcer. Of course you may, if you inquire, get a history of a woman who has had a series of miscarriages and possibly dead children; but you cannot always get a history of that kind, and you may very safely make the diagnosis from the facts which I have given you.

Now, no ulcers are more readily healed than tertiary syphilitic ulcers, if properly treated; and the treatment is this: to apply some local

mercurial and to give Iodide of Potassium internally. As regards a local mercurial, I know no better than the White Precipitate ointment of the Pharmacopœia, either of full strength, or, as I rather prefer it, diluted one half. But you may, if you prefer it, use lotions; and I show you here the two common lotions of the Pharmacopœia, the *Lotio Hydrargyri Nigra* and the *Lotio Hydrargyri Flava*. The *Lotio Hydrargyri Nigra*, made by adding Calomel to Lime Water, is not nearly strong enough. You may put as much Calomel as you like into the Lime Water: about 15 grs. to the ounce is a good strength, and it throws down a good deposit which you should take care to shake up before you use the lotion. The *Lotio Hydrargyri Flava*, on the other hand, which is 2 grs. to the ounce in the Pharmacopœia, is a little too strong for some persons, and you will find that you have to dilute it at first, and then revert to the full strength later on.

Then, in addition to the local mercurial you must give Iodide of Potassium internally. Now, Iodide of Potassium is a depressant remedy, and, therefore, you should combine it with a tonic, say 5 grains of Iodide of Potassium with 3 grains of Carbonate of Ammonia (which certainly increases the action of the Iodide) in Infusion of Quassia or Decoction of Cinchona: that is a prescription which is

most useful in these cases, and which closely resembles "Clarke's Blood-mixture."

Some people have an idea that Iodide of Sodium is less depressing than Iodide of Potassium. I do not say that it is; but it is convenient to have two strings to one's bow, and when I find a patient has been taking Iodide of Potassium before coming to me, I generally give her Iodide of Sodium for the sake of the change, and possibly because, in some instances, it seems to act better than Iodide of Potassium.

Then, of course, an ulcer may be too active; and I have the opportunity, it so happens, of showing you here a patient from the wards, a woman who has got a large sloughing ulcer of the leg. Of course, in order to produce sloughing you must have inflammation, and an ulcer may become inflamed under any circumstances, so that it is well to know how to make a diagnosis. The point about an inflamed ulcer is that it is hotter than it should be, and, if you put your finger against the skin close to the ulcer, you will at once appreciate whether the part is hotter than natural. If you find heat you may be quite sure that there is inflammation, and the best way to treat that inflammation is, no doubt, by cold. The patient should be put to bed; the leg should be raised; and then it is well

to let a stream of tepid or cold water trickle over the ulcer. That is very easily done without any complicated irrigating apparatus, by making a syphon with a skein of worsted from a jug of tepid water, and allowing it to run over the surface of the ulcer. The water evaporates and produces cold, and if you wish to get a greater effect you can, of course, put ice into the water.

But this woman has got something more than that: she has got gangrene of a large surface of skin; and that, of course, must take time to separate and come away. She is in a very low state of health, and I doubt whether she will survive long; but there is the ulcer, and we must get away the slough, at the same time taking care, as far as possible, of the patient's strength. Now in the wards I have ordered that she shall have Iodoform poultices applied, and we shall gradually get the slough away. Then the surface which is exposed beneath will be a granulating surface, and that we shall be able to dress in the ordinary way, and so I hope to bring about a cure.

But you must remember that some ulcers slough very rapidly; and that we have then a form of disease which it is very important to recognise, and which is apt to spread to other patients. When I get a patient with a foul sloughing ulcer I always avoid sending the

case into the general ward, and put it into a room by itself; for there is no doubt that, if you admit a foul sloughing ulcer into a general ward, there is a tendency for other wounds in the neighbourhood to take on an unhealthy action. Here again irrigation is one of the best methods of treatment; but, if the sloughing is really extensive, one has to take rather more prompt measures; and I know of no method better fitted to check a sloughing ulcer than the application of the strongest Nitric Acid. But then you must do it properly. You must, in the first place, dry the surface of the ulcer, and then into the edges of it with a piece of wood—there is nothing better—you should rub the fuming Nitric Acid thoroughly, not merely into the sloughing surface but a little into the skin beyond. Then you will find that under a poultice a slough will come away; and in all probability you will have checked the unhealthy action.

We see, of course, ulcers of very important parts, such as the penis, where a considerable ulceration will lead to destruction of important structures. Now, you can certainly check the sloughing chancre by the application of Nitric Acid, if it is thoroughly done in the way I have described.

Then again you must be prepared to find from time to time ulcers taking on an un-

healthy action, which we call phagedæna. I am happy to say that in our hospital it is many years since we have had an outbreak of phagedæna, and I trust we shall never have another; but still one ought to be able to recognise it, and the great feature is the grey surface of the ulcer, which spreads with considerable rapidity. These phagedænic ulcers are undoubtedly, to my mind, connected with syphilis. The treatment is, in the first place, to isolate the patient, to destroy the surface with Nitric Acid, and then to bring the patient under the influence of Mercury.

Modern surgery has very much facilitated the healing of large ulcers. M. Reverdin was the originator of the method we commonly call skin-grafting, which consists in taking a little piece of healthy cuticle with a pair of scissors and implanting it upon the surface of the ulcer. In the wards you have seen cases in which skin-grafting of this kind has been very useful. The advantage of it is that it forms islands in the middle of an ulcer from which proliferation and growth of cuticle can take place; and consequently a large ulcer can, by this method, be healed much more rapidly than if we only trusted to the granulations and to the growth of cuticle from the margin. But Prof. Thiersch, of Leipzig, has recently introduced a method of more extensive grafting

which you have also seen in the wards, and it consists in paring from a healthy surface with a razor a large piece of cuticle, and then implanting that upon the surface of the ulcer, which has been previously thoroughly scraped to get rid of all the granulations existing upon it. You will see, then, the difference between the two methods. In Reverdin's method merely grafts are implanted upon the granulations, which are presumed to be healthy; in Thierseh's method the granulations are removed with a sharp spoon, and then the large sheet of cuticle is placed over the ulcer, in both cases strict antiseptic dressing being employed.

Both methods have their advantages, and may be used in appropriate cases.

There is just a third method, called Wolfe's method, which you have seen me try lately in a case of destruction of the nose. It consists in removing the whole thickness of skin and implanting it upon the healthy granulating surface of another part of the body. In my own case, I am sorry to say, the result was not satisfactory: but still it is a method which might be employed with advantage where portions of the skin have been lost and require replacement.

ON

FRACTURES OF THE LOWER LIMB

GENTLEMEN,—During the last two months we have had in the wards under my charge the average number of fractures, but it is a little remarkable that we have not had a single case of compound fracture. I will first direct your attention to the case of fracture of both thighs which you have just seen in No. 1 Ward. The patient is a man who fell a distance of forty feet down a lift and sustained a fracture of both thighs, but, fortunately for him, they were simple and not compound. The fractures in this case have been treated by the plan of weight-extension, and the result we have obtained is very good. In the right thigh, where the fracture occurred lower down than in the left, callus has been thrown out, and it is evident that a good union has taken place, and this at the end of four weeks. At the fracture in the left thigh less callus has been formed, but still union has occurred, though perhaps a weak union. Extra care must, therefore, be

taken of the case, and by putting the two fractures up in plaster-of-Paris for another four weeks perfect union may be expected. You will remember that I said in the ward that it would be better to get the patient up and about, and I said this because, after a man has been lying in bed for four weeks, his strength begins to fail, and he will do better by getting about in a fixed apparatus than by lying on his back in bed.

Let me here remind you of a case of absolute non-union of a fracture of the femur, which was sent up to the wards under my care a short time ago. Although the case had been well treated in the usual manner by perfectly competent surgeons, there was absolutely no union. I had that patient brought into this theatre, and under an anæsthetic I applied extension so as to bring the two parts of the fractured bone thoroughly together, and I also went through the manœuvre of bending the bone at the seat of the fracture. It is possible, though I do not say it was so in this particular case, that the two surfaces of the broken bone had not been brought into close apposition. Some tissue, perhaps, may have been interposed between the two surfaces, and that would be quite enough to account for the non-union of the fracture. To have simply made extension would probably have been of no use, and I therefore did what

you have seen me do before, though not in a case of fractured thigh—I bent the bone at the seat of fracture, the object being to place the limb in the position it was probably in when the fracture occurred, and then to try to bring the ends together so that they should grate one against the other. In this case I think I succeeded in getting the bones into very fair position, and the fracture was then put up in plaster, fixing both the hip and knee-joints. At the end of a fortnight, however, the patient again required our attention, because the plaster had given way at the groin and wanted repairing. I had fresh plaster put on outside the old at the groin and let the man go away till after Christmas, when he is to return, so that I can take the plaster off myself and see how the case has progressed.

We have, then, two cases—one a case of weak union, the other a case of absolute non-union—both treated by fixation, and both allowed to be up and about on crutches. So far as the splint will allow, there will thus be pressure made on the two ends of the bone at the seat of fracture, and in that way I hope we shall have extra callus thrown out and avoid an operation for ununited fracture.

I would remind you how important it is, in the leg particularly, that the fracture should be set thoroughly and accurately. Of course I

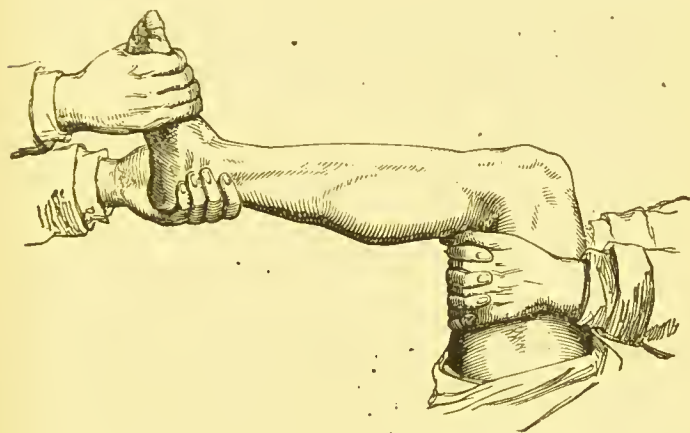
know well that there are many difficulties. Immediately after the accident all the muscles of the limb are more or less in a state of spasm, and tend, therefore, to pull the bones into abnormal positions; but that state of spasm passes off in the course of a few hours, and you can generally manage with care and patience to put the limb into a proper position, and unless that is done, and done accurately, the surgeon has not treated the case properly.

Looking at this specimen from the museum, you can see that there has been a fracture of both the tibia and fibula, and the probability is that they were broken by direct violence, because the fractures are nearly opposite one another, whereas if the accident had occurred from indirect violence the fracture of the fibula would have taken place higher up. I therefore think that we shall be right in saying that this was a case of direct violence, causing, as you can see, very considerable displacement, the lower fragment of the tibia passing behind the upper fragment. Union in this case has been very complete, abundance of callus having been thrown out, but the patient recovered with a shortened and deformed limb. This is just the class of case of which I was thinking when I emphasised the importance of thoroughly setting a fracture. In this case apparently there

has been no thorough setting or keeping of the parts in apposition.

The first thing to see to in such a case is relaxation of the muscles while extension is applied to the limb, and a good way to attain this object is shown in Fig. 1. The thigh is flexed, and an assistant should pull on the limb in the manner shown, the lower part of the

FIG. 1



thigh being firmly clasped and held perpendicularly to the recumbent body; the leg is then flexed to a right angle with the thigh so as to relax the muscles of the calf, and the surgeon, grasping the foot, can manipulate for fracture or dislocation. It is in this form of fracture of both bones of the leg that I would recommend you, occasionally, to flex the limb at

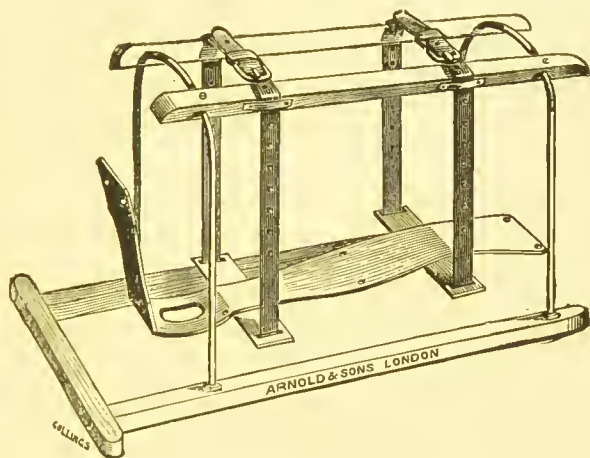
the seat of fracture, if you cannot get the bones into good position. This may seem a dangerous proceeding, but it is not so hazardous as one might think, though you must nevertheless be very careful to avoid making a simple fracture compound.

In the average case, however, you can set the fracture in the way I have described without much trouble, and in compound fractures you can manage it with greater ease, and, moreover, you can insert your finger and feel if the two ends are in accurate apposition. In compound fractures also you will be able to thoroughly investigate the possible presence of a spiculum of bone preventing accurate apposition, and no one would hesitate to push the bone out of the wound and saw off such a projecting spiculum. In cases of compound fracture, where you find, the moment after you have set the limb, that the bones become displaced again, it would be quite within the bounds of good surgery to divide the tendo Achillis subcutaneously, or to drill the two fragments and put in pegs or screws to hold the bones together; and I may say that this method of pegging or screwing has been recommended by an enterprising surgeon, not only for compound but also for simple fractures. But I cannot conceive how any one can believe that it is justifiable to convert a simple into a

compound fracture, and of this I am quite certain: that the majority of surgeons for the present will remain content with the usual methods of treatment.

The tendency of the lower fragment to drop back with the foot is best met by the use of a back splint, and I know of none better than what is commonly called Arnold's splint (Fig. 2).

FIG. 2



If the foot is carefully bandaged to the upright foot-piece, and then extension made until the fracture is properly set, the upper fragment can be fixed to the splint by a broad band of adhesive plaster, and a bandage carried over it and above the knee. The side splints, which are subsequently applied with webbing straps, help to keep the bones in position, and the

inner border of the great toe should be in a line with the inner border of the patella. This afternoon I called your attention in the wards to a recent fracture of the tibia, where I was not quite satisfied with the subcutaneous line of the bone; I therefore asked my house-surgeon to raise the foot a little, and immediately this was done the fragments dropped into position, and the improvement was obvious. The importance of thus raising the foot in oblique fractures of the tibia is not sufficiently recognised; it is a valuable point to remember, and I learnt it myself from Mr. Jonathan Hutchinson.

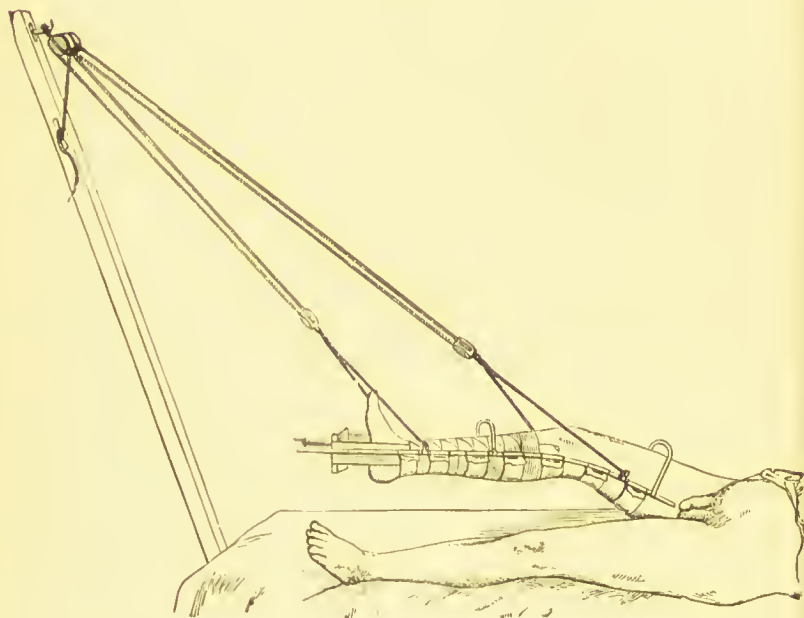
Returning to the case of the man with both thighs fractured, let us briefly consider how fractures of the thigh should be treated. The particular method used depends to a great extent on the views of the individual surgeon, and I am not prepared to say that there is any very special advantage in one treatment over another. Provided you will only attend carefully to certain rules, you may perfectly well expect equally good results from different methods. In my own wards, as a general rule, and in accordance with local tradition, Liston's long splint with a perineal band is the method usually adopted, and its results are quite satisfactory. Of course, there is no hard-and-fast rule, and here is a case in point where the

method of weight-extension was more convenient. It would be a little awkward to put up a fracture of both thighs with Liston's splints, unless you used an apparatus such as Bryant's, consisting of two long splints and a cross-bar, the extension being made by an india-rubber accumulator. I am quite content, however, to treat a case of this kind with weight-extension, using retentive splints around the fracture; but then there are two or three points to which you must give particular attention. The plaster by which the extension is maintained must be taken above the knee. This is not so well known as it should be; for you occasionally find that a house-surgeon has applied the plaster up the leg, but has stopped below the knee, the result being that the knee-joint is pulled upon and possibly damaged; whereas, if the plaster be continued above the knee, you are applying weight-extension to the fractured bone, the necessary counter-extension being obtained by the weight of the patient's body. Sometimes it is found necessary to raise the foot of the bed, but usually the weight of the patient's body is sufficient, and it is seldom that you find yourself reduced to the necessity of using a perineal band attached to the head of the bed, except in cases of fracture in children.

Hodgen's splint (Fig. 3) is much in use at

Guy's Hospital. There is a strong pole from the foot of the bed, and from that pole, which projects away from the bed, is arranged a pulley connected to a wire splint, in which the limb is supported by pieces of flannel attached to the bars. It is not sufficient that the limb

FIG. 3



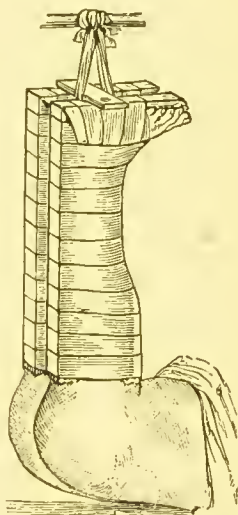
should be simply lying in the splint; there is, in addition, plaster extension carried well up to the thigh, and maintained by cross straps in the same way as if the leg were straight. It is said that by using this method of Hodgen the muscles of the calf and of the thigh are

relaxed, and that the limb is therefore in a better position for the treatment of the fracture. I have asked patients treated with this apparatus whether it were comfortable, and they have said it was so; but, speaking for myself, I do not think the advantages claimed for it are sufficiently clearly proved, and it has never been much used in this hospital.

Let me here remind you of another method, which I have not lately been able to illustrate practically in my wards—a method of treatment of children with fracture of the thigh invented by Mr. Bryant (Fig. 4). The child is suspended by its feet from a cradle, with splints on the broken limb, but both limbs are suspended for convenience, and extension is obtained by the weight of the child's body falling into the bed. The convenience of the position is very great, for the buttocks are well exposed, and the child can be easily kept clean.

Let us now consider these cases from the nurse's point of view. The management of the bed-pan is an important matter, and in the ward this afternoon I directed your attention

FIG. 4



to a very convenient plan, that of using a divided mattress. The division is made opposite the buttocks of the patient, and the interval is occupied by a cushion, which can be removed for the introduction of the bed-pan. Of course you can have regular invalid beds for these cases of fracture, such as are advertised in the journals; but these are all expensive and not adapted for hospital work, and I consider the plan of dividing the mattress an easier and better method.

We have, however, to consider the patients as well as the fracture, and you must bear in mind that your patient has been damaged by the accident, in some cases considerably damaged, and you have to treat that damage as well as the fracture. Your patient may be a man in good health, perhaps temperate, perhaps not; for to any inquiries you make on this subject you may usually anticipate emphatic denial of any excess. But you may find, as evening comes on, that your patient's temperature rises; that happens in any case of simple fracture, and you need not therefore be alarmed. Still, if the temperature rises three or four degrees and your patient becomes restless—perhaps tries to get out of bed and kicks about the uninjured leg—then you have to deal either with a case of true delirium tremens, especially if your patient's health be under-

mined by drink, or with a case of traumatic delirium, which may occur in any patient. In the case of traumatic delirium the patient seldom becomes violent, but is wandering and excitable. After a dose of morphia subcutaneously he will probably go off to sleep and do well, but, if it be a drunkard who has a fracture, you may find that he develops delirium tremens. The patient gets into a nervous, shaky condition, and after a day or two (the second night is usually the time) he becomes very violent and unruly, kicks about with his sound leg, displaces the apparatus for the fracture, perhaps pulls it off, and you may find the fracture dangerously disturbed. These cases are extremely troublesome to treat. In my student days we used to treat them with opium and brandy, and most of them died. Nowadays we give them chloral hydrate combined with bromide of potassium, and repeat it every few hours till the patient is quiet, at the same time giving him plenty of liquid nourishment and his beer. I say, "Give this class of patients beer" advisedly; they have probably been accustomed to a good deal of gin and other spirit as well as large quantities of beer, and if you cut them off these stimulants altogether the want is severely felt, and the result is unsatisfactory. If, then, you give them their beer and follow it up with a smart

purge, as a rule you will find that the appetite returns and you get your patient through the attack.

In the treatment of fractures there is another point to be well borne in mind. On visiting a patient the evening after a fracture it is a good rule always to carry a catheter, as it may save going back for it; and you should never omit to inquire whether the bladder has been emptied. A man may have nothing wrong with his urinary organs, but after a fracture may be unable to micturate, and, if left all night unrelieved, will be in great distress and run a possible chance of cystitis. If the patient, therefore, has been some hours without emptying his bladder, pass a soft catheter and relieve him; he will sleep comfortably, and next morning will be probably quite able to pass urine himself.

Another point that you should be careful about is the patient's bed. You know, of course, there is a great variety in beds; but, if you can, have a narrow bed with horsehair mattresses. With fairly well-to-do people you can telegraph to London for a single iron bedstead and two horsehair mattresses; it is only a matter of waiting a few hours, and not much expense. To treat a fractured thigh on an old-fashioned four-post bedstead with a feather-bed is an almost impossible task. The advantages of

having a single bed are that the "four-poster" can be removed from the room, thereby very much increasing the air space, and that the surgeon and nurse can so much more easily deal with the patient. But I am afraid you will not always be able to have horsehair mattresses, and in the houses of the poor you may have to be content with a flock mattress, which is not such a bad mattress to treat a fracture on, or you may have to manage with a straw palliasse. If you can have your patient on a flock mattress with a palliasse under that, he ought to do well; but in any case you must discard a feather-bed, for the patient sinks down into it, and it is as impracticable as it is harmful. The use of fracture-boards is not unusual in the treatment of these cases; boards are slipped in between the mattresses to make sure that the patient does not sink down too deeply, and this is important in cases where you have a heavy patient. The arrangement may be either one large board the size of the mattress, or, better, separate boards inserted between the mattresses.

I now come to the consideration of the cleanliness of the patient and the state of his back. A great deal depends on the nurse. With a good nurse who understands her work the patient will be kept dry; the urine will be properly looked after, and even if the patient

is an imbecile, passing everything under him, still a good nurse will keep everything right—but I hope you will not have many patients of that description. The best plan is to turn the patient on to his side and let the nurse wash the buttocks and back, and then dust them well over with some powder—oxide of zinc, for example, or the more common violet powder—preventing in this way any irritation. Always remember that if you once let the back get sore you will probably not get it well again, and that it is a very serious matter for the patient. Still, with every care the skin may become red, and it is well in that case to protect it. *Papier Fayard* in layers is what I often advise; it is an unirritating paper plaster and very cheap, or you may prefer to use something thicker—as, for instance, plaster spread on kid or leather. The skin can also be hardened by rubbing it with a mixture of brandy and oil. If, however, your patient complains of his back, and on examination you find a black slough forming in the skin with unhealthy discharge beneath, you know then you are in for a bed-sore; and sometimes these sores rapidly increase in size and result in the death of the patient. Now when a bed-sore has reached that state, nothing can be done till the slough is removed, and the best way to do that is to apply an old-fashioned linseed poultice well

sprinkled with iodoform, and to blow iodoform into the sore itself. After the slough has separated, stop the poulticing and stimulate the ulcer with red wash or some slightly stimulating ointment, and in that way you may hope to heal the bed-sore, though it will seldom become quite healed until the patient is able to get out of bed.

Remember also that elderly people are very apt to have some congestion of the lungs. The mere position in bed conduces to hypostatic congestion of the lungs, and, if that congestion is allowed to continue, it is apt to end in a low form of pneumonia, which may carry off the patient. In your cases of fracture, then, in old people, and especially in the winter months, if you find your patient suffering from chronic bronchitis, you must remember how the position aggravates the condition. For myself, in cases like this I encourage the patient to sit up as much as possible during the day, and with an ordinary fracture of the leg there is no reason why the patient should not be propped up, so that the passive congestion may be relieved by position and the bronchitis by expectoration. If, however, it is a case of fracture of the thigh, and especially if the fracture be high up, the difficulty is increased, but still you can support the patient's neck and the upper part of the back and help

him to get rid of some of the mucus clogging his lungs.

The proper management of the patient's bowels still remains for consideration. In any patient kept in bed the bowels are liable to become costive and the liver congested, and particularly is this the case with the class of patients met with in hospital practice. Take, for instance, the case of a robust, healthy man who has met with an accident; after the first day or two he has practically nothing the matter with him, and he takes his food freely, the probability being that it is much better food and more of it than he has been accustomed to. The natural result is that his liver becomes congested and his bowels costive, and every now and then a patient like that gets a slight attack of jaundice simply because he has overeaten himself. The proper treatment then is to keep the bowels regular, but not purged. I find that the compound rhubarb pill answers very well; the patient has one or two free evacuations and feels very much better. I do not think it is wise to worry the patient's bowels with saline purges, and this particularly applies to elderly people, who probably do not overload their stomachs with food.

I have now gone over most of the practical points in connection with fractures of the

lower limb, but have purposely avoided going into the details of each fracture, because I wished to-day to bring before you the more important points of practical utility bearing on the clinical aspect of the subject.

ON

COMMON DISEASES OF THE RECTUM

GENTLEMEN,—I shall speak to-day about the common affections of the rectum. In the ward you have just seen a man on whom, ten days ago, I operated for piles, and this is one of the common affections of the rectum ; but, when you get into practice, you will meet with many cases of piles which do not require operation. For instance, a woman comes to you and says she has a feeling of weight about her rectum, and that she is never quite comfortable. She does not get the relief he should when her bowels act, and sometimes blood passes with the motion. You may find that she is a middle-aged woman, has probably had two or three children, and that these symptoms always become aggravated when she becomes pregnant. That is very likely a case of internal piles, and it is your duty to examine and ascertain whether it is so, and, of course, it is necessary for you to know the feel and aspect of a healthy rectum before attempting

to diagnose a diseased one. With your finger in the bowel you will be able to feel that there is more or less enlargement of the hæmorrhoidal veins and hypertrophy of the mucous membrane around, forming prominences in the rectum of varying size. But let me advise you not to be satisfied with a mere digital examination, but make the patient use an enema and then strain, and you will often be surprised at the amount of hæmorrhoidal disease which will thus be brought into view.

An operation may be contra-indicated by the existence of pregnancy; and let me warn you never, if you can possibly avoid it, to do an operation upon a pregnant woman, for, however slight the operation may be, you will very likely produce abortion, from which very serious results may accrue. If it be a case in which operation is contra-indicated, you must, of course, temporise, and treat the patient in other ways; so also with many slight cases where the necessity for operation does not arise. The first thing, then, is to see that the patient's liver is doing its work properly, for in people with congested livers we very commonly find internal piles. Again, persons who do not take proper exercise very often have large hæmorrhoidal veins, which bleed from time to time, but in them the loss of a little blood is rather beneficial than otherwise.

First, then, regulate the patient's bowels, and get the liver to act. For this, a mild laxative is better than a powerful purgative, and there are several such laxatives; sulphur is a favourite one—a teaspoonful of milk of sulphur taken in a little milk every morning will give a healthy evacuation and very much relieve the patient. If that is not strong enough, you may use some other preparation, such as the compound liquorice powder—a teaspoonful or two stirred up in water and taken every night or the first thing in the morning. Cascara is one of the fashionable drugs of the present day, and a teaspoonful or two of the elixir of cascara will produce a fair evacuation. The objection to it is its exceedingly disagreeable taste. In addition to such medicines, you can produce an evacuation, in people who are habitually costive, by injecting a little glycerine into the rectum. A few years ago this was a very fashionable proceeding, and all chemists sold little syringes for the purpose. A better plan is to use a suppository containing a drachm of glycerine, the suppository being allowed to melt in the bowel. But among medicaments for the rectum there is nothing better than cold water; in the first place it acts as a stimulant to the bowel, and in the second place it has a tendency to constrict the vessels, and helps to restore the circulation to its normal condition. Whatever

the disadvantages of water-closets may be from a sanitary point of view, they certainly enable persons to wash themselves after evacuating, which is far preferable to the habit of using paper. The Eastern nations always wash after an evacuation, and in that respect are very much cleaner than we are, and there is no reason why Europeans should not wash themselves after that function, as a quantity of clean water can easily be put into the pan of the closet for the ablution. Where an injection is necessary, I always recommend the individual to carry a Higginson's syringe to the water-closet and throw up cold water, and there is no need for the complicated apparatus occasionally seen.

If the case is one in which there is some little continuous worry—I will not call it pain—it may be wise to use some form of sedative to the bowel. The old-fashioned gall and opium ointment is not at all a bad one, but is objectionable on account of its fæcal colour. Belladonna ointment has the same drawback as gall and opium, but one grain of sulphate of atropia mixed with one ounce of lard makes a very good ointment; it can be introduced on the finger, is soothing, and gives great relief.

Patients who have trouble about the rectum should, as a rule, evacuate their bowels at night. We healthy people go to the water-closet, as a matter of course, after breakfast;

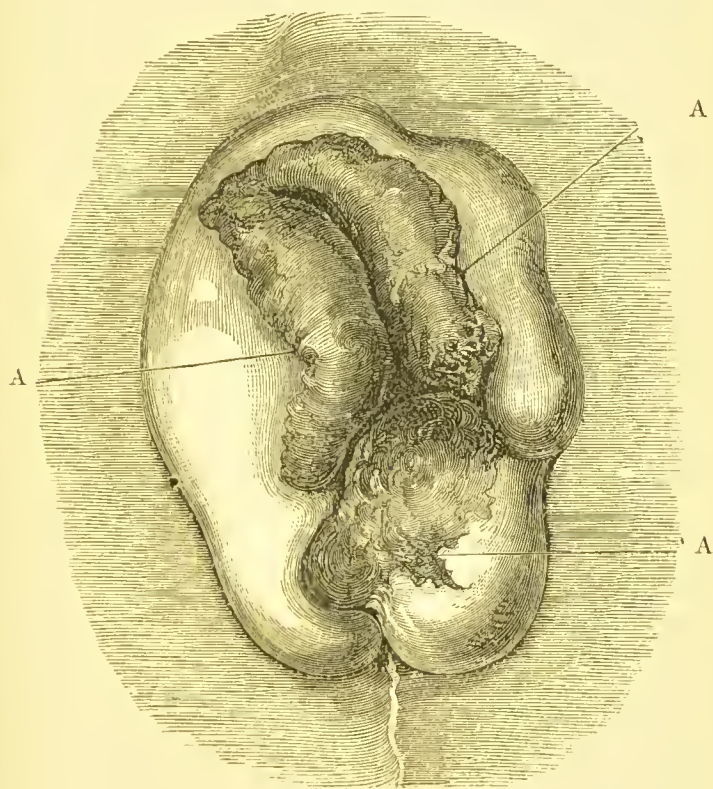
but sufferers from the rectum cannot do that. If they evacuate in the morning they are miserable for an hour or two afterwards ; therefore it is important for their bowels to be relieved the last thing before going to bed. Then they have eight to ten hours in a horizontal position, and the bowel has time to readjust itself by the hour of rising. This is particularly applicable to business men and those who have to leave home at a certain time every morning.

If the case is more severe than those I have described, you may have reason to operate ; and, in order to do so, it is well that the patient should get the piles down, to enable you to see them properly and get at them thoroughly. Therefore the patient should first have a purge, followed by an injection, and should then strain to get down the piles before you operate. The accompanying woodcut (Fig. 5), from the late Mr. Curling's work on Diseases of the Rectum, shows very well the appearance of internal hæmorrhoids which have protruded from the anus, and I would particularly call your attention to the delicate skin of the anus, which is everted with the piles. This is not so highly coloured as the mucous membrane, which protrudes and forms the piles, and these are usually more or less purple in colour.

In the case of the man in the ward, those who were with me at the operation will

remember that the first thing I did was to dilate the sphincter. Let me beg you to do that in every case on which you operate; it

FIG. 5



is a comparatively modern improvement in operating for piles, but its value is very great. When the patient is thoroughly under chloroform, you put your forefingers into the anus, and

steadily but forcibly dilate the sphincter. The advantage is that, without actually tearing the sphincter, it is paralysed for the time, and you are then enabled to draw the piles down; another advantage is, that, the sphincter being paralysed for a day or two, the patient has none of that wearying, constant contraction of the anus which gives rise to so much pain, and which was always present in former years.

The piles being protruded, there are half a dozen operations which you may use, and the one I generally employ in a well-marked case of piles is to apply a ligature. The modern operation of applying a ligature is very different from the older one, when it was the custom to transfix the pile by a needle and tie it in two portions. The danger was that the needle which transfixed the pile very probably went through a vein also, and then when the vein was pulled wide open there was possibly suppuration, and the patient might get pyæmia, from which some patients used to die; whereas such a thing is hardly ever heard of nowadays in connection with piles. Draw down the piles with ring-forceps or a pile-hook, such as I show you, then take a pair of seissors and cut between the skin and the mucous membrane (A, Fig. 5) so that you do not tie any skin in. That is very important, as the skin at the verge of the anus is very

liberally supplied with nerves, and if you tie in a portion you will give excruciating pain to your patient for many hours. Having thoroughly isolated the pile, tie the ligature high up round the base. Then cut the pile off well beyond the ligature, and having dealt similarly with the other piles, return the bowel with the ligatures, which hang out of the anus.

But with the man in the ward I had something more to do, because he had external as well as internal piles; that is to say, the whole of the skin of the anus had become hypertrophied, and if I had left that it would have been very bad for the patient. I therefore took two or three snips of skin away, cutting from the outside towards the anus, and then stitched together the edges of the cuts I had made. This stitching of the edges of the cuts is of great advantage to the patient, as the parts heal much more readily than when left to themselves, as they used to be; and I therefore strongly advise you to do this, notwithstanding that it makes the operation a little longer. Afterwards put a little iodoform into the rectum, and a suppository containing half a grain of morphia, and then look up the patient's bowels for two or three days.

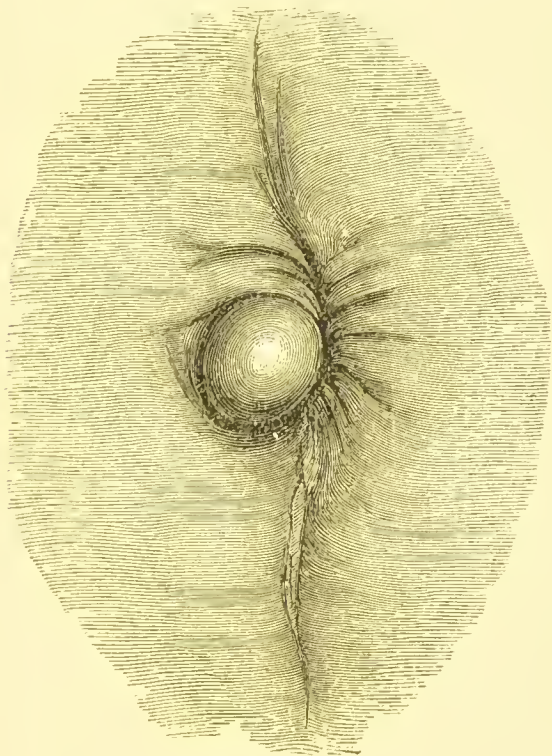
There are other methods of treatment, one being with the clamp. I do not like the clamp myself, but I show you one here. The

clamp is not so well suited for internal piles, but it may be advantageously employed where the patient has got a quantity of loose mucous membrane, which comes down at every evacuation and protrudes, although there may be no distinct piles. In those cases you can clamp up one or more portions, and, having screwed the instrument up tightly, you can then cut the mucous membrane off close, and sear the surface thoroughly with a Paquelin cautery.

There is one form of external pile to which I will direct your special attention, because you are much more likely to encounter it in private practice than in hospital. It is a small matter of inconvenience only, and the lower classes will often stand a good deal of inconvenience before applying for relief. A patient will call upon you and say that he has been dining out a little more than usual, or his bowels have been constipated, and he finds he has got a little lump by the side of his anus. Never prescribe for any anal affection without examining; you must see for yourself and ascertain what is the matter, and you will probably find a little bluish ball, which is very well represented in Fig. 6. There is no inflammation, or very little, merely something which looks like a bluish pea, which is tender, and worries the patient when he sits down. That is nothing more than a clot in one of the

inferior hæmorrhoidal veins, and the proper treatment is to make a small incision into it and squeeze the clot out. This will immediately relieve the tension, and healing will

FIG. 6



at once ensue if a little simple dressing, such as cotton-wool and iodoform, be applied. If that is not done, however, one of two things may happen; suppuration may take place

around the clot, when a little abscess will form and discharge itself; or, a more frequent sequel is that the clot undergoes absorption, and a little loose fold of skin is left there. This is the explanation of the small folds so often seen about the anus.

Now let me say a word about that extremely painful condition of the anus, which we will call "fissure." I purposely have not said that piles are painful, because, as a rule, they are not so, but only wearying and troublesome. But when a patient comes to you complaining that when he evacuates he has a very sharp pain, lasting for perhaps an hour, so that he is compelled to lie down, you may safely infer that he suffers from fissure. You are bound to examine, and you can generally see the fissure if you get the patient to kneel up so that the light enters the anus, and then gently open it. You will find the anus considerably contracted, and the patient will not like the passing of your finger, but the finger should first be smeared with vaseline, and should be introduced with a spirall motion, not a straight thrust. Down one side of the anus you will find a little crack in the mucous membrane, the explanation of which in most of these cases, at least in the male, I believe, is that the patient has had a very costive motion, and has had to pass through his anus a large mass of hard feces, so that the

parts become a little over-distended and possibly torn. In the female there is no doubt fissure does sometimes occur in parturition, the woman has a bad labour, and the effect of the stretching of the parts for the passage of the child's head is to leave her with a fissure.

In the treatment of fissure you may use palliative or radical measures. If the fissure has only just occurred, it will very often get well under the treatment I spoke of in connection with internal piles—belladonna or atropia ointment and keeping the bowels relaxed. But if the fissure occurred a week or two before the ease is seen, that treatment is inadequate, and by far the best method in such cases is to dilate the sphincter. I know it is painful for the moment, but the relief subsequently afforded to the patient atones for the pain of dilatation, and in the majority of cases it is not necessary to administer an anæsthetic, though in a nervous woman this should be done.

But there are cases of extensive fissure, where it may be necessary to divide the sphincter partially with the knife, and for that you should lay the patient up and give him an anæsthetic. In an old-standing case, in which there is much induration, it may be better to pass a finger into the bowel and guide upon that a bistoury, withdrawing the finger and knife together. The result is that the knife cuts into the

fissure and divides a few fibres of the sphincter. It is never necessary to divide the whole sphincter; any one who does so really causes his patient a mischief, by paralysing the bowel and causing him to lie up longer than is necessary.

Another troublesome affection of the anus is pruritus ani, and subjects of this suffer very considerably. The story is this: A patient finds, on going to bed and getting warm, that he gets the most intolerable itching about the anus, and that this itching not merely keeps him awake, but almost necessitates rubbing of the part. Continual rubbing will produce a condition of eczema such as is illustrated in this drawing, though I have not myself seen one quite so bad as here represented. It is well to eliminate any possible cause for this irritation; and a very frequent cause in children is the presence of ascarides. But it is well to remember that thread-worms do occur in adults; therefore, if you have any suspicion of their existence in the patient, you should take means to clear them out of the bowel, partly by purgatives and partly by injections. There is no better injection than the old-fashioned salt and water, which kills the worms, but their habitat is the cæcum, and purgatives enable you to remove the masses of eggs from which they are developed. Having done this, it may

be well to make an examination of the rectum to see if there is a pile, which may keep up the irritation; or you may be obliged to fall back upon that refuge for the destitute—gouty diathesis, which has a good deal to answer for. The number of local remedies which have been applied to cure this anal irritation is wonderful. A 5 per cent. solution of cocaine painted upon the anus, after careful washing of the part, will sometimes give relief. Atropia I have also found very useful—one or two grains in an ounce of spermaceti ointment or lard, but by far the most successful application I have found to be the following prescription by Dr. Oliver of Harrogate:

R. Bismuthi Subcarbonatis	ʒij
Ung. Picis	ʒj
Ung. Lanolini	ʒj

A suppository of 15 grains of cocoa butter put into the rectum and allowed to melt sometimes does good. You may, of course, apply opium or belladonna as well, but the mere presence of cocoa butter seems to give great relief. They are very troublesome cases, and the worst point is that after using each fresh remedy, which appeared at first to give relief, the patient returns, stating that he is as bad as ever; that he can get no sleep at night, and is miserable. It is no doubt a neurosis, and you must attend to the general health, eliminate

every possible source of irritation, and then build up the patient's health in every available way.

Of course the practitioner should always be on his guard as regards syphilitic manifestations in the form of mucous tubercle about the anus—*i.e.*, large flat plaques on each side of the anus. When the patient stands up the two surfaces come into apposition; and I wish particularly to insist on that, because there is no question that a mucous tubercle will inoculate the surface against which it is pressed. Separate the surfaces, and then apply a folded piece of linen on which some white precipitate ointment has been smeared, and tuck that in carefully between the buttocks.

The affection is seen in syphilitic children, and is common in the lower class of prostitutes, but may occur in an innocent woman who has contracted the disease from her husband. Any form of mercury will do good. Some people prefer powder rather than ointment, and then the part should be thoroughly washed with soap and water, and dusted with calomel, afterwards a piece of fine lint or linen being placed between the affected parts. You must, of course, recognise that mucous tubercle is an evidence of constitutional syphilis, therefore the appropriate treatment of syphilis must be undertaken as well. Bear in mind also that

mucous tubercles are communicable, and that a woman may convey the disease to her husband, and *vice versâ*. Of course, one does not believe half the stories that one hears about water-closets, but it is a fact that women do sometimes pick up syphilitic disease on the dirty water-closets of railway stations and places of that kind.

The next common complaint I will speak about is the occurrence of bleeding from the rectum in children. A mother tells you that she notices a little blood in the child's motion, and that each time it evacuates the bowel comes down. It may be a case of prolapsus, but it may also be a case of polypus of the rectum. This latter is not at all uncommon in children, and with the finger you can at once ascertain whether there is a body hanging down by a narrow pedicle some inch or so within the rectum; if so, it is a polypus, and you should immediately, with your nail, tear the pedicle and take the polypus away. Though the polypus has been the cause of hæmorrhage in the rectum, sometimes for months together, it is very remarkable that you can tear through the pedicle and have no hæmorrhage at all.

But it may be a bona-fide case of prolapsus. This is not so very uncommon in children, and may be simply a result of debility; or it may be a symptom of more serious disease, such as

stone in the bladder ; but is more often a case of debility. A badly nourished child is put on one of those wretched chairs with a hole in the bottom, in order that it may evacuate its bowels, and is often left there for an hour at a time, until it suits the convenience of somebody to take it out. During that time it continues to strain, and at last brings down the bowel. That is the explanation of the much greater frequency of prolapse among children of the poorer class ; the better classes take much more trouble with their children, and do not allow them to get into those bad habits.

The way to cure a simple prolapse is to prevent it from occurring for a few days, and if the mother carefully carries out, for a week, the following instructions, the trouble will generally end. Show the mother how to put her finger upon the verge of the anus, and draw it to one side, and so convert the circular anus into a slit ; then the bowel is puzzled and cannot come down. I have done that over and over again with success, and matters are expedited by giving iron and attending to the feeding. I am not going to speak of the more serious cases of prolapse to-day.

The last common anal affection to which I desire to allude in this lecture is ischio-rectal abscess, with its resulting fistula. From time,

to time you will see cases of abscess at the side of the anus, which are generally due to some perforation of the bowel by a fishbone or pin, or by a small ulcer, through which fæcal matter has escaped and set up an abscess. This is exceedingly painful, and almost prevents the patient from walking. The great point is to incise such an abscess freely, after giving an anæsthetic, and see if it has already opened into the bowel. If it has, time will be saved by laying open the bowel, and if this be not done, a fistula will certainly result. In many cases the bowel does not require to be laid open, but if I find the abscess goes some little distance up the side of the rectum, I feel sure it will eventually burst through, and it saves time to lay the whole thing open at once. Many such cases are treated domestically, and then they degenerate into fistula.

Fistula in ano is divisible into complete and incomplete; and I think the majority are complete, but the surgeon does not always know where to find the internal opening. There are comparatively few examples of incomplete fistula, and they are divided into two classes—blind internal, and blind external. These terms are used somewhat arbitrarily, for a blind external fistula is a fistula which opens outside and is blind internally; a blind internal fistula is an internal fistula opening into the

bowel, but having no opening outside. In the great majority of cases there is both an external and an internal opening. The commonest places for the internal opening of fistula are either between the two sphincters or immediately above the internal sphincter, though the fistula may occasionally run higher up. In the slight cases, when the internal opening is once found, there is no difficulty about the operation. All you have to do is to slip a probe-pointed director into the external opening, and insinuate it along the fistula to the internal opening; then, guided by your finger introduced into the rectum, bring the point out through the anus, and run a sharp-pointed bistoury along the groove to divide all the tissues. That is far better than the old plan, which was this: The surgeon took a blunt-pointed bistoury and insinuated it up the fistula, then met it with the finger at the internal opening and withdrew them together, cutting through all the tissues.

But what I have described does not complete the operation in many cases, because some of these fistulæ are extremely chronic, and they branch in more than one direction, and you will not cure your patient by laying open only one branch. Having laid open the several fistulæ, it is a good plan to remove with sharp seissors the overhanging skin, because these edges may fall together and practically close.

the wound. The removal of this skin permits the fistula to granulate up from the bottom.

The modern after-treatment is much more humane than the old plan, for it used to be the practice to poke some lint into the fistula every day, which gave an infinity of pain. I never have a fistula dressed at all. I thoroughly lay it open, trim it up, rub a little iodoform along it, and then lay in it a little cotton-wool. I do not plug up the rectum, but put a suppository into it and let the patient go to bed. In a day or two he has his bowels relieved, and that brings away the small piece of cotton in the fistula, after which the dresser or nurse syringes out the fistula with a little red lotion twice a day, and the patient experiences no pain. In fact the operation for fistula is now a comparatively simple matter.

ON

STRICTURE OF THE RECTUM

GENTLEMEN,—We have at the present moment in No. 5 Ward two cases of stricture of the rectum. The patient about whom I shall first speak is a woman, *æt.* thirty-five. She states that she has had good health, but allows that she has had two miscarriages. Further than that we can get no specific history. I mention this at once because she is suffering from stricture of the rectum, which is generally thought to be due to syphilitic poison. About seven years ago (in 1889) the patient experienced great difficulty in the passage of the motions, much straining being required in order to defæcate; the stool invariably contained a bloody discharge, and great pain was felt during the process. At first no notice was taken of this, as she thought it was due to piles. In both the patients whom we are considering to-day the symptoms were thought to be due to piles, in one of them the opinion being shared by the medical attendant. I would therefore advise you never to treat a

case of so-called piles without first examining the rectum. This woman of thirty-five has been suffering from difficulty in defæcation for seven years, and four of these were allowed to pass before she sought medical assistance. In 1892 she went to Guy's Hospital, where she was informed that she was suffering from stricture of the rectum, and was advised to enter the hospital. She made arrangements to do so, but for various reasons did not then become an in-patient. Her condition remained the same until last June, when she went to the Lewisham Infirmary, but only stayed there two weeks. There she was told she would have to go to a hospital, and about a month ago she came here, and was admitted into No. 5 Ward on October 28.

Here, then, is a woman of only thirty-five years of age, whose rectum is practically completely blocked. Those of you who examined her the first time she was seen after admission, will remember that there was an exceedingly small opening, which would hardly admit the end of the little finger. When I found the opening was so extremely small, I ventured to insinuate my finger into it with a little force, which dilated it sufficiently for me to feel that, though the lower part of the rectum was exceedingly rough, evidently the seat of extensive disease, yet when I passed my finger through the

tight ring I found healthy mucous membrane above.

There is no obvious history of syphilis in the case; the only fact which points in that direction is that she has had two miscarriages, and we all know that miscarriages may be due to other causes than syphilis. Then arises the question, What is the nature of the disease? Is it certainly syphilitic stricture? That is the opinion of most surgeons. They think that these young women have syphilitic stricture, due to infiltration of the walls of the rectum; that they have acquired syphilis early in life, say, when they are twenty; that then they go through more or less secondary symptoms, and that when they arrive at about thirty years of age they begin to develop gummata in the rectum. This fact is somewhat remarkable, because, as you are aware, gummata in other parts of the body do not usually show themselves so early in life. We look upon gummata as some of the later manifestations, certainly the tertiary manifestations of syphilis, and we find gummata on the tongues of people over fifty; but it is unusual to find gummata at the age of thirty-five. There are other views, however, put forward about these cases. One of them is that it is not syphilis at all, but is a chancreous ulceration, extending from the vagina. These women are, of course, very apt to get

various forms of disease about their genitals; and it is suggested that when they get soft sores upon the labia or in the vagina, the discharge from these sores is apt to inoculate the anus, spread up the rectum, and so give rise to the stricture. I must say that this has always seemed to me a very unsatisfactory explanation.

I thought I had better look up one of the most recent books on the subject of syphilis, namely, Mr. Alfred Cooper's work, the second edition of which is published this year, and is edited by the late Mr. Edward Cotterell, who was an old house-surgeon of my own. He says: "Gummatous deposits and infiltration of the submucous tissue are the most common causes of syphilitic ulceration and stricture of the rectum. Fournier, however, dissents from this view, and thinks that, in the majority of cases of stricture of the rectum in syphilitic subjects, the condition is due to an infiltration of the ano-rectal walls with a new formation of unknown structure, a hyperplastic proctitis, which generally goes by the name of 'ano-rectal syphiloma,' and which has certain resemblances to the fibroid degeneration seen in the nose and larynx. It undergoes fibroid changes, and produces contraction of the calibre of the bowel. He states that, as a general rule, neither ulceration nor cicatrisation can be found in the rectum in cases of syphilitic disease, and hence

he infers that the morbid changes involve the submucous tissues rather than the mucous coat. Zeissl, on the other hand, states that the lesion is due to gummatous infiltration of the submucous tissue. The disintegration of the deposit causes ulceration of the free borders of the longitudinal folds and of the mucous membrane between adjacent folds. When cicatrization takes place, some of these folds are either obliterated or become adherent to each other; in either case the calibre of the bowel is reduced. Zeissl further states that distinct gummata are sometimes developed in the submucous tissue, and are followed by disintegration, ulceration, and severe stricture. He reports a case of this nature occurring in a man, presenting also syphilitic nodes and sarcocoele." You will see, therefore, that there is a difference of opinion; but I think we may say that the weight of authority is in favour of there being gummatous deposit in the walls of the rectum. The only point which at all favours the view that there may be some infiltration from the vagina to the rectum, is the notorious fact that these strictures are infinitely more common in women than in men.

Be the cause what it may, there can be no question how the disease comes on—that there is first a deposit and then ulceration, and that during ulceration there is profuse discharge.

The woman who is now in the ward has no special discharge from the rectum, but if you had seen her some time ago it would have been evident. In recent cases a profuse, semi-purulent, offensive discharge is present. Moreover, there is about the anus a feature which is very characteristic of this syphilitic ulceration: that the skin becomes hypertrophied, causing those loose "tags" of skin which I have mentioned to you before. This was so evident in the woman in the ward, that on seeing them I ventured to say we should be pretty sure to find syphilitic stricture.

When you see these cases in the ulcerative stage you must heal up the ulcers, and at the same time prevent undue contraction. During that stage, I think there can be no doubt that antisyphilitic remedies—particularly iodide of potassium—do good. Syphilitic ulcer of the rectum should in fact be treated much in the same way as syphilitic ulcer of the leg, viz., by giving iodides internally and applying a local mercurial. It is very much easier to apply an ointment than lotions to the rectum; therefore the best plan is to let a patient who is suffering from syphilitic ulceration of the rectum have some sort of bougie with which she cannot do herself any harm, smear it with a little blue ointment, and have it pushed up every night. This brings the ointment into

direct relation with the sore; moreover, the passage of the bougie tends to keep the passage dilated. You ought, of course, to carry the treatment on for some time, but my experience of this class of patient is that they will not carry out any treatment properly. As soon as they begin to get a little better, and the ulcer commences to heal, they stop the treatment, and do not come again until they get into very much the same condition as our patient in the ward—*i.e.*, until they have an almost impassable stricture. Fortunately, the stricture is always low down, within reach of the finger, and this enables you to dilate it if you are sufficiently careful.

For that purpose there is no better bougie than an ordinary old-fashioned tallow-candle which has been previously warmed. They run about eight to the pound. A piece of string can be tied to the wick at the end, to prevent the candle going out of reach. Remember that these candles can hardly do any harm, but I regret to say that only in September last I distinctly brought about the death of a woman by using a bougie upon her—a case very similar to the one in the ward, but not quite so bad. I had her down in the theatre, gave her chloroform, dilated the stricture up with my finger (I don't think I passed a bougie at all), and I told the house-surgeon not to pass

a bougie, for fear of any accident. She survived the operation, and no harm appeared to have been done. When I next went round the ward I, without any difficulty passed one of the ordinary small bougies, taking the precaution to have it warmed and well greased before use, and leaving it in only an hour. The patient made no particular complaint, but within a few hours after the withdrawal of the bougie she began to get urgent symptoms of pain in the abdomen, which went on to acute peritonitis, and she died. Then we found, as I had anticipated, that the bougie had passed through the stricture, impinging upon the softened part of the bowel above it, and had penetrated into the peritoneum. That is by no means a solitary instance of the kind in surgery. Of course each such case causes great regret, and the occurrence should be guarded against as much as possible.

I show you an instrument here merely for the purpose of warning you against using it, viz., a very powerful dilator, which was invented for these strictures by a surgeon now deceased—Mr. Armstrong Todd. You will notice that, when I turn the handle, there is an ingenious arrangement of cross-bars by which the two blades are widely separated. When this instrument was first brought into use it was thought to be exceedingly good, and surgeons employed it somewhat freely. The first

inconvenience they found was that, when shutting the instrument prior to withdrawal, the mucous membrane was very apt to be caught between the blades and torn in withdrawal. To obviate that, the use of an indiarubber cover, resembling a long finger-stall, was suggested. By this means all the good points in the instrument are retained, and the bad avoided. But the danger is this: if you dilate a stricture suddenly and forcibly, the tear is apt to run farther than you imagine, and you are in danger of going through the wall of the rectum.

Cases are occasionally met with in which the contraction is exceedingly strong, and the stricture hard and tough, so that little progress can be made with the ordinary bougies. In such cases the best plan is to notch the stricture with a knife; it is very much safer than tearing. With your finger introduced into the stricture you slip up a blunt bistoury, and you can then, by using a little pressure, notch the stricture in three or four places. This, however, should only be done with patients who are under your control; never do it to an out-patient, for fear of anything going wrong. The worst of these cases is that the disease is very apt to recur, owing to the fact that the mucous membrane is practically destroyed, and nothing is left but a mass of fibrous tissue, which is very apt to contract.

You may do good for a time, but the patient, if she have any confidence in you, will come back from time to time saying she is as bad as ever. Perhaps the best course with these patients is to perform proctotomy, by which I mean the division of the coats of the rectum on the posterior surface, where there is no peritoneum, going right down to the sacrum. It is not such a severe operation as it might at first appear. The tissues are all indurated, there is very little hæmorrhage, and what there is can be controlled by temporary plugging. This will often benefit your patient more than any other proceeding.

The only alternative in these very serious cases is to do colotomy. I have, in former years, done that for cases of this nature, and have seen it done many times; but I must say I do not recommend it. Colotomy makes the patient an invalid for life. These women are generally under forty, and if I were to do colotomy for the woman in the ward she would be a confirmed invalid before she has reached middle life. Therefore I think one should exhaust every other means before recommending colotomy. Of course, if a patient comes to you, in whom the contraction of the bowel has been allowed to go on until a state of distension is produced, it may be necessary to do colotomy as the only means to

save her from dying of obstruction; but with this exception, after having had some experience of the operation, I should not be inclined to resort to it.

We now come to the other form of stricture, which, I am sorry to say, is also very common—viz., epithelioma of the rectum. You will remember that, a few days ago, there was an old lady in the hospital whom we all examined, and who undoubtedly had epithelioma of the rectum. But the growth was only on one side, the vaginal side, and there was no particular difficulty in the feces passing, and there was no ulceration to give her much pain. I, therefore, advised her to wait, saying I would take her in at any time and operate upon her if the symptoms became more urgent, but that on the whole she could very well wait, and see how she got on.

Here is a very different case, in a woman of only fifty. She first noticed something wrong in the rectum last spring, and was for a time treated for piles. Five weeks ago she was examined, and told that there was something more than piles. She has had great difficulty in passing motions, and that difficulty has increased up to the present time. The state of the patient is now as follows: She is pale, looks considerably more than fifty, rather eaehectic, complains of difficulty in getting the bowels to act; there

is some discomfort in the abdomen, not actual pain. The abdomen is not distended, but is quite flaccid. Nothing abnormal is felt *per anum*, but the lower part of the rectum is much dilated, and contains some fæces. Three inches from the anus there is an irregular nodular growth projecting into the lumen of the gut, and causing so much narrowing that the finger can only just be inserted. The growth is annular—it forms a complete ring in the bowel; it is very hard, but no ulceration is felt. Examination causes pain, but not bleeding. The finger cannot be passed through the growth, therefore its extent cannot be determined. *Per vaginam*, a hard mass is felt at the upper part, projecting into and invading its wall, one nodule being close beneath the mucous membrane in the posterior fornix. Although we are not able, in this particular case, exactly to determine the extent of the growth, we know that it is already involving the vaginal wall, which makes it pretty evident that the disease is far advanced. Unless I do something to relieve the condition of things, in a short time she will probably have absolute obstruction, and die from distension.

In this patient the disease has existed for many months; but you must be prepared to see such cases in the early condition, when in private practice. Cancer of the rectum affects

men as frequently as women, and in the early stage the man has perhaps noticed that he has not been feeling well, has been generally out of sorts, and has possibly had some indigestion. But the only definite symptom he has noticed is probably the occurrence of morning diarrhœa. Now, that is very characteristic. The patient finds that he cannot get through his bath and his dressing without going to the closet. After he has breakfasted his bowels are again opened, and after the stool they are still a little irritable. He perhaps evacuates again at night, but it is the morning diarrhœa which is important. If he takes the trouble to look at the motion, he will see that it is broken up into small pieces; it is not the uniform mass of fæces which is met with in health. When you hear such a story, you should always suspect that the patient may have trouble about the bowel. I may say that the late Sir Andrew Clark, to my knowledge, "spotted" a good many cases of cancer of the rectum which had not been suspected, by always insisting upon examining the rectum when he found any symptoms pointing at all in that direction.

It is a satisfaction to tell a patient he is suffering from nothing serious. Therefore let me again beg of you to take every opportunity of examining healthy rectums, so that you may

be able to detect the slightest deviation from health. You will find, in most cases of cancer, that somewhere just within reach of the finger there is a hard lump, perhaps on one side, possibly all round. Sometimes the lump is just out of reach of the finger; in such cases, by drawing gently upon the mucous membrane, you can bring it within reach. I advise you to get the patient to strain down, and a good plan is to give him an enema just before the examination, then let him go to the closet and get down all he can, and you will find that he has brought the disease within reach of the finger. You will remember this particular patient told us that, when she went to the closet, she felt something in her bowel come down. If the stricture comes down close to the anus, one finds the condition which was at one time laid great stress on, but which is, in reality, quite unimportant — the occurrence of tape-like motions.

If you make the diagnosis correctly, you must, of course, inform the patient or some friend what the probabilities are. I do not mean that you must tell a patient who has a lump in his rectum, or a slight ring, that he must have colotomy done; that would be ridiculous. But you must let somebody know that his health is not what it should be, and that he will probably get worse. Meantime,

you will give general directions. In the first place, tell him to avoid all indigestible food; he may take chicken, fish, or lamb, rather than beef or mutton. There is no objection to puddings, but he should specially avoid all stimulating foods, such as spices, curries, and hot soup, which are apt to cause irritation about the lower bowel. He should be very careful about liquor. He should avoid all champagne and effervescing wine; beer is not good, and there is nothing better than a little spirit and water in great moderation. Then he certainly ought to get into the habit of having his bowels opened at night, so that, if there is any difficulty with them, he may be able to get eight or ten hours' rest afterwards. The best plan is to take some slight laxative—a little oil or liquorice powder, or sulphur—in the morning, to produce a mild evacuation in the evening. It is well also to throw up a little water and wash the bowel out, because the feces irritate the surface.

Lastly comes the question of sedatives. If the patient has pain, which keeps him awake at night, it may be advisable to begin the use of suppositories, containing a quarter of a grain of morphia, or a quarter of a grain of belladonna, increased as occasion requires. While the patient can go about his work and get fairly

comfortable evacuations, he should do so; the time will come when he cannot do it, viz., when ulceration commences. This is accompanied by discharge and excruciating pain, and generally patients have to lay up, and you are obliged to increase the quantity of morphia to produce any comfort at all.

The operation which I propose to do for this woman next Wednesday is to open the sigmoid flexure of her colon in the left groin. There is an older operation, called Amussat's operation, which was in the loin, and it is a curious historical fact, which Sir John Erichsen mentions in his book, that he was present, as a student, in Paris when Amussat performed his first lumbar colotomy. Lumbar colotomy answers extremely well, but we have improved upon it by inguinal colotomy, although I still do lumbar colotomy in tight strictures where the bowel is full of liquid fæces. In a case such as that of the woman now in the ward, there is no doubt that inguinal colotomy is preferable. I shall make an incision about four inches long—two inches above and two inches below the anterior-superior spinous process, in a slight curve. I shall cut through the abdominal wall, the external oblique, the internal oblique, and the transversalis, or rather, as a modern improvement, I shall cut through the external oblique, and tear through the

other muscles, thus making some sort of sphincter for the bowel afterwards. Having got through the three muscles, I shall come upon the fascia transversalis and the peritoneum, both of which have to be opened. This brings one, without the slightest difficulty, upon the sigmoid flexure, easily recognisable by the muscular longitudinal bands, which are unmistakable. If the sigmoid flexure is not actually in view, the small intestine has to be pushed aside and the flexure sought for. It is necessary to make sure that you are above the seat of the disease. It is not in every case that the disease can be felt from the rectum, and occasionally colotomy has to be performed without feeling anything. It has happened to me to have opened the left side, found that I was not above the disease; then to have stitched up the wound and opened the colon on the other side, the patient making a good recovery.

The colon is pulled up and brought out of the wound, and I am then in the habit of using a glass rod pushed through the meso-colon, to support the bowel in its place. Some surgeons do not use this, and I do not insist upon it; but I do insist on the necessity for stitching the colon, although I know some surgeons say it is quite unnecessary, and that if the parts are merely left in apposition they will unite. But you must remember that you have got the

peritoneal cavity open, that the patient may have a violent attack of retching when he gets back to bed, and a piece of small intestine may be forced out by the side and produce a hernia. This actually occurred in a case of my own, where I had used stitches, the vomiting forcing out a couple of the stitches, and the small intestine coming through under the dressings. The house-surgeon thought it right to examine the parts after the retching was over, found what had happened, put the small intestine back, with two or three extra stitches, and no harm came of it. But in another case the accident might not be found out directly.

It was formerly the practice, and was usual when I did my first operations, to draw forward the parietal peritoneum, and attach it to the skin. Some one suggested that this was quite unnecessary, and the late Mr. Greig Smith, of Bristol, who was a great authority on these subjects, maintained that peritoneum and skin do perfectly well together, and that they unite without any trouble, and so it appears to be. The bowel, having been brought well out, is dusted with iodoform, and the dressing put upon it. It is well to leave it alone for four or five days if possible. I shall do the operation on Wednesday; and shall probably open the bowel when I go round on Monday. If the patient were uncomfortable, I should open it

on Saturday or Sunday. The bend which you make in the bowel by the glass rod practically blocks the lumen of the bowel; and the patient will pass no flatus *per anum* after the operation.

When you have cut away the projecting surface of the colon you have two openings, the upper one leading into the bowel, from which the fæces immediately project, and the lower opening leading into the rectum, which is usually empty. If all goes well, the patient will begin to defæcate naturally from the artificial anus, and in the course of a fortnight or so all the parts cicatrise, and there is usually a wonderful amount of sphincter power, so that the patient is able to know fairly well when fæces are ready to pass, although such patients cannot generally retain the flatus. With regard to the upper opening, we usually adapt to it an india-rubber colotomy pad, the projecting finger-like process of which is put into the lower opening, and then the fæces emerge from the upper opening beneath the pad. The lower opening should be washed out about once a week. If this is not done, inspissated mucus collects, and is apt to irritate. A week or ten days after the operation I tell the nurse to put the patient on a close-stool, and wash out the bowel with warm water.

If, at the operation, there should be difficulty

in finding the bowel, a very curious thing sometimes happens, viz., the bowel gets twisted, and when you come to open it you find that, instead of fæces coming out at the upper opening, they emerge at the lower one. I have heard of that a good many times, but have only once met with it myself. Why it should be so I cannot tell. The patient we have been discussing looks as if she will do well. Of course, the operation I am going to do will in no way cure her rectum, but it will remove the source of constant irritation from fæces, and will entirely obviate any possibility of her becoming obstructed, and it will therefore prolong her life. In these cases the patients may go on very comfortably for two, or even three years, which is the average duration of life after colotomy; whereas, if the operation were not performed, she could not live more than three or four months, so that there can be no doubt about the propriety of operating in her case.

ON
TETANUS

GENTLEMEN,—You have just seen in the private ward the case I am now about to lecture on. The history is shortly this: a young man of twenty-eight was admitted ten days ago, on June 13, who ten days before, that is June 3, was troubled by a nail in his boot giving him some pain. On examining the ball of his foot he found a small sore, which festered; he bathed it in hot water and applied some ointment. This wound is now quite healed. On June 10, at dinner (seven days after being injured) the patient found that he had some difficulty in swallowing, but he persisted in forcing some food down. This difficulty got worse, and the next day the patient found that he had pain in his chest and back, and on Friday, June 12, he had to give up work, and some difficulty in talking became noticeable.

This patient was admitted on Saturday afternoon, June 13, and I saw him a couple of hours after his admission. He was lying on

his back, and there was marked rigidity of his abdomen, and also some rigidity of the masseter muscles. When he tried to force himself to swallow some food, a condition of spasm followed. I came to the conclusion that he was suffering from a mild attack of tetanus, due to the wound in the foot, and the case, therefore, was to be classed as one of chronic tetanus. Now, tetanus is not common in this country; we have not had a case for a considerable time. I have seen one or two in private, but for some years none have been in my ward. Tetanus varies very much as to whether it is acute or chronic, traumatic or idiopathic. A case of acute traumatic tetanus is almost invariably fatal, that is the general experience; but if you get a case of chronic tetanus, whether traumatic or idiopathic, then you may hope that the patient will convalesce and recover; that is what has happened to this patient.

What is the definition of the word tetanus? I need hardly remind you that it is derived from the Greek *τέινω* "to stretch." The best definition probably is "a powerful and painful spasm of the voluntary muscles which is long continued and uncontrollable," that is, the spasm is continuous, or, what we should call "tonic," as distinguished from "clonic." The spasm of tetanus is therefore continuous, there

are no distinct remissions, whereas we have in convulsions distinct remissions of spasm, and these we call clonic. And even in tetanus we get from time to time, in a bad case, an access of spasm of a clonic description, by which I mean that there is a sudden spasm, lasting perhaps for a minute, which throws the patient on the head and the heels; it then passes off, and in that way it is clonic, but the general rigidity never passes away. These convulsions are very serious, because it is in one of these attacks that the patient usually dies. You find that the patient is thrown into opisthotonos, his back is arched, and he rests on his head and heels, there is spasm of all the muscles of inspiration, his chest is fixed and he ceases to breathe. If that lasts for less than a minute, the patient, though exhausted, begins to breathe again; but if it goes on for two or three minutes, the patient falls back dead, and that is the usual conclusion of these acute cases. The patient dies from apnoea because he is unable to use his respiratory muscles.

The majority of these cases are traumatic, and the form of trauma which more frequently leads to tetanus than any other is a lacerated wound, and every now and then in a wound you may find a branch of nerve exposed. If you can cut that away so much the better for the patient, but it is not to be made out very

often, and all you know is that the patient has sustained a lacerated wound, and that earth or dirt has been ground more or less into it. The meaning of that will be more clear when I speak of the bacillus.

I will quote a case of my own. A year or two ago, the son of a medical man, out riding, was thrown from his horse and sustained a lacerated wound of the skin over the knee; it did not involve the knee-joint, but much dirt was ground into the wound. So little was thought of the injury that the patient went up for an examination, and then he went home to his father. At his father's he fell ill and I was telegraphed for. I found that he was in violent spasms, and he died in a few hours.

The spasm of tetanus does not always take the form of opisthotonos; there are other varieties, but the opisthotonos form is the commonest. Then there is the reverse form, when the body is bent forwards, resting on the forehead and feet, called emprosthotonos; and another form, in which the body is bent to the side, called pleurosthotonos, but this is a very rare condition. In our patient and in all patients suffering from tetanus there is always trismus, that is, more or less spasm of the masseter muscles closing the mouth, and this was rather marked in this patient when he first

came in, for there was marked rigidity of his masseters; he has now only a little tendency to the sardonic grin—the risus sardonicus—depending on the muscles going to the angle of the mouth, which draw it up and give it that peculiar appearance.

In a mild case like this, I trust mainly to the rigidity of the abdominal muscles for my diagnosis. The recti abdominis appear to be the muscles which are very early affected with this spastic contraction, and they remain in that condition till the patient either recovers or dies. You have all had an opportunity of feeling this patient's abdomen, and you will have noticed that there is still rigidity present. With the rigidity there is apt to be retention of urine, for emptying of the bladder depends to a certain extent on the action of the abdominal muscles, and, therefore, in cases of acute tetanus, the bladder should always be emptied from time to time. We come finally to the spasm of the diaphragm and intercostal muscles, which generally proves fatal in these cases. Spasm of the heart does not occur in tetanus.

There are three conditions which it is convenient to contrast with one another: tetanus, hydrophobia, and the results of the administration of strychnia. In tetanus there is no intermission, there is no thirst, and the mind is clear,

In hydrophobia there are very distinct intermissions, there is an aversion to water, and there is marked thirst; but in these unfortunate people with hydrophobia, when they attempt to drink, such a spasm of the pharynx is produced that they are nearly suffocated, and hence these patients refuse water. In hydrophobia there is delirium, and there are convulsions towards the end, the patient dying in a maniacal condition in convulsions, and very often with opisthotonos. In strychnine poisoning there is no trismus; you have spasms of all the voluntary muscles, but no marked trismus; the cases are more rapid; within half an hour of the administration of the dose they develop symptoms, and if called in your first question would probably be: "What has the patient recently swallowed?" The most common method of taking strychnia is by swallowing rat poison. In a case of suicide, the patient has most probably been lately buying small quantities of rat poison, and has evidently taken more or less of it. If it is a case of poisoning by some one else, then you must be on your guard as to what the patient has been given. In the well-known Rugeley poisoning case it was proved that, whenever the unfortunate victim took any food which Palmer had prepared for him, in half an hour he invariably got a fresh access of spasm.

A good deal of light has been thrown of late

on the etiology and pathology of tetanus. Formerly we thought it was something wrong with the medulla oblongata and spinal cord, for all that was known was that, after death from convulsions, it was generally found that there was more or less injection of the medulla oblongata and spinal cord, and of the membranes of the brain; that was common to hydrophobia and also to strychnine poisoning, and to any case of convulsions.

Ten years ago, the first suggestion was made that there was a distinctive bacillus, which would be found to be the cause of tetanus. A Japanese student, Kitasato, working in a German laboratory in 1889, was the first to isolate it, and show that there was such a distinctive bacillus. Now that bacillus, if you have ever the opportunity of seeing it, is remarkable in its shape, and no mistake about it is possible; it is called the drumstick bacillus, for it has a spherical head with a straight tail coming down from it, and the name "drumstick bacillus" represents fairly well the shape of it. This bacillus is very like a bacillus which is found in mould or earth, and is known as the earth bacillus, and there seems to be a distinct relation between the earth and the disease tetanus, because we find that tetanus is so apt to occur in any wound which has earth or dirt rubbed into it. The case I mentioned

just now of the surgeon's son, who fell from his horse and had a considerable quantity of earth rubbed into the wound, is only one of many examples; and although we have no evidence of earth bacillus in the case which I am considering now, still the man's boot would have contained dirt, and his feet probably were not very clean, therefore the inoculation might have been through the wound in the great toe. This gives a clue to the origin of tetanus and makes surgeons careful to clean every wound, because you never can tell which wound may be infected by the bacillus, and this seems to be fairly common.

Up to quite lately the treatment of tetanus was most unsatisfactory. You will find that, in the first place, it was recommended that amputation should be performed, and we still sometimes venture to amputate. In the case of a smashed thumb sent to me some years back, tetanic spasms had begun, and I amputated the thumb to get a clean wound, but the patient died. I think a thumb or finger or a toe may be fairly amputated in such a case as that, but for my part I do not advise the amputation of a whole limb, because the results are usually so unsatisfactory. I do not think for instance that one is justified in amputating the thigh when the spasms are well marked, because the effects of an operation

and the loss of blood would do more harm than good.

Then besides thoroughly cleaning out the wound and using every antiseptic precaution you can, you must have recourse to some drug internally. The older surgeons believed mostly in opium, and their patients often died in an insensible condition from over-doses of opium. All the sedatives have been tried from time to time, and without any very good results. Then the bromides came into practice, and later, chloral; these two drugs in combination became the fashionable treatment for this class of case, and I think, altogether, they are the most satisfactory. As I was not able to obtain any of the tetanus antitoxin for this case we are considering, two drops of croton oil were administered to clear the bowels, and the patient had 15 grs. of bromide and 20 grs. of chloral every four hours. In a couple of days he was well under the influence of the drugs, and he has been taking them for the rest of the week. I have now directed that to be stopped, and have ordered him an ounce of camphor mixture; this is only to ease the patient's mind, because he will probably like to think he is taking something. This is only to be taken till the effects of the bromide and chloral pass off, and I think he then will be well, for it is one of the chronic cases which usually do

get well; but I thought it right to use the drugs, and I have not any doubt that they have done him good.

In acute tetanus there was a drug that was once much in vogue, viz., calabar bean, which is used by ophthalmic surgeons to contract the pupil. It was thought that we might get some benefit by giving it in tetanus, but I have tried it and find this, that unless you give almost poisonous doses you produce no effect at all, and when you push the drug so as to contract the pupils strongly and to produce almost poisonous effects, the patients die all the same if it is an acute case, and they get well if it is a chronic one. You will remember that some few years ago nerve-stretching was in vogue, and was going to cure all sorts of things—locomotor ataxy and many other diseases. When it was in fashion, several surgeons with cases of tetanus tried stretching the nerves, and I have here notes of one or two cases of that kind, and the inference I draw is that in a case of nerve-stretching in which the patient was suffering from acute tetanus he always died eventually. A case that recovered was probably a chronic one, and in that case I particularly note that the stretching was not very thoroughly carried out.

The tetanus antitoxin is difficult to procure. When I heard of this case I went at once to

the particular chemists who are supposed to supply it, but they were out of it; then I communicated with Dr. Sidney Martin, and also with Mr. Horsley, who could not help me in getting the drug, but both these gentlemen came and agreed in the diagnosis, and both concurred in giving the chloral and bromide. Tizzoni and Catani are the pathologists who have worked principally at this subject, and Roux and Vallard have also studied the matter. By inoculating animals, horses and so on, they were eventually able to get immunity, and the serum of these animals becomes the "tetanus antitoxin," and it is this that is injected. It was of no use to inject such a small quantity as Dr. Martin happened to have by him, for he told me that we should require a very large quantity of antitoxin, and, therefore, not having the amount necessary for the treatment, it was not begun. Clarke, of Leicester, seems to have been the first doctor in this country to carry out the treatment, and his case recovered. He injected 100 grains in twenty-four hours, and went on for some days. Dr. Kanthack, of St. Bartholomew's Hospital, gained the other day the Jacksonian prize on the subject of tetanus: he has been working at the subject for some time, and I hope that his essay, which will shortly be published, will be widely read. But at present we know very little of this

antitoxin. The cases in which it has been used are few, and the difficulty of getting the material prevents the employment of it in many cases that occur.

The suspension of the administration of chloral and bromide was followed in twenty hours by a distinct attack of spasm with opisthotonos, while the patient was taking food. The administration was at once resumed and continued for ten days, when the drugs were reduced to half the dose, and under this the patient slowly convalesced.

The following case of traumatic tetanus, which was unsuccessfully treated by injection of antitoxins, occurred in my ward a few months after the preceding case: On Monday, June 7, 1897, a healthy butcher, aged twenty-one, was using a small rifle loaded with a cartridge filled with sparrow shot, when it fell and went off, while his hand was over the muzzle, and the charge entered his hand as a whole, but it did not perforate. He was seen by a doctor, who washed his hand, and told him to hold it in as hot water as possible, and then to poultice it. This he did until Thursday, June 10, when matter began to exude from the wound in the palm and the hand swelled. None of the shot were removed. On Saturday, June 12, the swelling on the back of the hand was opened by the doctor who, the patient says, removed a

piece of lead. Patient felt all right except for pain in his hand. On June 13 patient got up at 8 A.M.; felt stiffness and pain in the back of neck, could not swallow, and found difficulty in opening the mouth; could not eat or drink anything, found difficulty in walking, with slight rigidity. Came up and was admitted to hospital.

June 13, 1897, 3 P.M. On admission patient looked pale and anxious, walked rather bent and rigid, with tottering gait. Slight stiffness and pain in the back of the neck, in sterno-mastoids, trapezius, &c. Unable to open the mouth more than one inch, but no spasm or rigidity of masseters present. Could not swallow at all, choked if attempted. Tongue white, furred, and dirty. Teeth very dirty and decayed, breath offensive, eyes normal, with slight injection; pupils react normally. No rigidity of abdomen; no rigidity of legs. Knee jerks absent; can speak fairly distinctly. Hand was put in a bath of 1 in 1000 Hg; he was ordered six grains of calomel of which he took four probably. An enema of castor-oil and gruel was retained altogether.

Injection, 3 P.M. 20 c.c. of tetanus antitoxin were injected into the subcutaneous tissues of the left loin with all antiseptic precautions. 6.30 P.M., enema simplex returned in toto. Urine passed.

Injection, 9:30 P.M., into the right loin of 16 c.c. of anti-tetanus serum, and patient was made to drink, with difficulty, at intervals, milk and brandy; stiffness of neck and back much increased. Some rigidity of rectus abdominis now. No spasms so far. No approach to risus sardonicus on drinking milk.

Right hand is swollen; no red line or swelling of the forearm; glands at elbow and axilla not affected. There is a small circular opening with black sloughy edges opposite the middle of the ring finger, and about three-quarters of an inch from the web; the wound would admit a small bullet. This leads downwards and outwards for a short distance. Probing is painful, and the tenderness and hardness are most marked opposite the middle finger. There is a short and almost healed cut over the interspace between the third and fourth metacarpal bones.

June 14. Patient slept one hour last night before 2 A.M. and dosed for short intervals afterwards. Took a feeder of milk and $\bar{3}j$ of brandy every four hours well, though with difficulty. No actual spasms. Cork put between teeth. This morning, rigidity in back of neck, spine, and abdominal muscles much increased. Retraction of head marked; pupils react, eyes suffused. Tongue bitten once or twice,

Injection, 10 A.M. Patient was given chloroform, and an injection of 30 c.c. of antitoxin was made under the skin of the abdomen in two injections. At the same time Mr. Heath enlarged the palmar wound and scraped it well, and also the cut on the dorsum. Placed in bath of 1 in 1000 Hg. again. An attempt was then made to feed by the nasal tube, but unsuccessfully, spasms coming on and food being brought up. After anæsthetic tongue was protruded and caught between the teeth and got back with difficulty. Passed water in night — $\bar{5}vj$ sp. gr. 1040, albumen. No sugar. No deposit.

11.30 A.M. Slight spasms, with approach to opisthotonos and risus sardonicus, began every five minutes. Takes milk with great difficulty, and a good deal comes back as froth; lies with mouth open, tongue swollen, but not bitten now. Passed $\bar{5}xij$ of urine same as before.

Injection, 2 P.M. At Mr. Heath's visit 37 c.c. of anti-tetanic serum were injected under the skin of the abdomen. Spasms very much increased; during the visit had twenty-seven in one hour. He frequently cries out, then straightens himself, clenches his teeth, and the angles of the mouth are drawn up and back. Left arm and leg are moved about a good deal.

4 P.M. Spasms not so frequent. Right arm moved about, but left leg is kept quite still,

6 P.M. Owing to the excessive movements, arm bath had to be removed and fomentations applied. Spasms more frequent, every two or three minutes.

Injection, 10 P.M. A violent attack with spasm of the right arm and leg came on with opisthotonos. Patient got very livid about the lips, with stertorous breathing and quick rapid pulse. The heart's beat was very forcible, and there was a very palpable systolic thrill and murmur. Oxygen was given to inhale and 5jss. of brandy by the rectum, but was of no avail. Pulse weakened. 10 c.c. of antitetanic serum were injected, but respiration ceased two minutes after, and one minute after that the heart failed.

Death at 10.15 P.M., thirty-one hours after admission. Temperature after death 108.8.

For the more modern treatment of tetanus by the intra-cerebral injection of antitoxin, reference may be made to an article by Dr. D. Semple, of Netley Hospital, in *British Medical Journal*, January 7, 1899.

ON

MENINGOCELE AND ENCEPHALOCELE

GENTLEMEN,—The infant you have just seen me operate upon is an example of congenital malformation which is not very uncommon, and which you ought thoroughly to understand. The tumour at the back of the head was, as I showed you by puncturing it, distended with fluid, and formed an example of the commoner form of meningocele, or protrusion of the membranes of the brain. The child, a few weeks old, had only a small posterior meningocele, but, under my colleague, Mr. Barker, there is a child with a very much larger one, so large as to resemble a second head; and you may take my word for it that most cases of so-called “double-head” are cases of large meningocele. Besides the cases of meningocele we have those of encephalocele, by which we mean a similar malformation, but with protrusion of part of the brain; and these cases are readily distinguished by the important fact that in the meningoceles there

is no pulsation, and they are translucent, whereas in the encephaloceles there is always pulsation present, due to the protrusion of the brain into the tumour, and they are, of course, not translucent. What I have done to this child is simply to puncture the cyst, and to draw off, as you saw, some clear watery fluid, which is the cerebro-spinal fluid. This is as nearly as possible pure water, containing only a little chloride of sodium, and, possibly, though not constantly, a trace of sugar. What I have done is simply to draw off a little of the water so as to relieve the tension, and then to paint the tumour with collodion; and by repeating this operation I hope to reduce the size of the swelling and eventually, possibly, to induce a cure. Let me warn you against taking any more active measures, because, if an attempt is made to remove such a tumour, it almost invariably ends disastrously and to the discredit of the surgeon.

I show you in Mr. Hutchinson's "Clinical Surgery" a plate giving several drawings of these posterior or occipital encephaloceles, and I also show you one plate of a very large posterior meningocele, of which the history is remarkable. In this case the communication with the cranium appeared to be closed, and, only on the very earnest solicitation of the parents, Mr. Hutchinson ventured to remove

the tumour, and with success. But cases of this kind are few and far between, and in infants, at all events where the communication is, as in our patient, perfectly obvious (because when the child coughs the tumour swells and becomes tense), to interfere with it would certainly lead to the child's death.

These cases are analogous to the deformity known as spina bifida. There is a want of development of the posterior part of the skull, similar to the want of development of the arches of the vertebræ in spina bifida; but there seems to be little doubt that the want of development depends not upon a simple arrest, but upon the fact that, very early in foetal life, hydrocephalus of the skull becomes developed. It is the pressure of the fluid within the brain and skull which prevents the due development of the occipital bone. But, be this as it may, the fact is undoubted that there is a hole in the median line of the occipital bone, through which the protrusion takes place. In the patient before you there can be no doubt of this, but in some of these children, where the opening in the skull is very near the foramen magnum, it becomes a difficult question to decide whether it is an instance of occipital meningocele, or an example of spina bifida of the cervical vertebræ. But let me remind you that spina

bifida of the upper vertebræ is extremely rare, it being most common in the lumbo-sacral region; therefore, if you meet with a case in which any doubt exists as to whether it is a spina bifida of the cervical region or an occipital meningocele, the chances are very much in favour of its being an occipital meningocele.

Encephalocele of the posterior part of the skull is less common than simple meningocele. Mr. Power recorded in 1856 a case of this kind, in which the occipital region presented a soft tumour equal in size to a very large orange. The deformity had obstructed the labour, and forceps were employed for the extraction of the head, the child surviving nearly twenty-four hours. On dividing the integuments in the middle line over the tumour, they were found to blend with the dura mater, the vertical plate of the occipital bone being entirely deficient, or replaced only by connective tissue. The arachnoid was well defined, and the vessels of the pia mater were extraordinarily numerous, large, and fully injected with blood. More than half the cerebral mass, comprising the whole of the posterior and part of the middle lobes of the hemisphere of the cerebrum, was contained in the tumour. The consistence of the brain was somewhat soft, but the distinction between

white and grey substance was perfectly evident.

The occipital encephalocele is by far the commonest of the varieties which are met with, but the most important, surgically, are those of the anterior part of the head, and particularly at the root of the nose.

The late Mr. Zachariah Laurence published a paper some years ago, in which he showed that in seventy-five cases of encephalocele reported up to 1856, fifty-three occurred in the occipital region, seventeen in the frontal region, and five in the parietal and temporal regions.

In that year I brought before the Pathological Society of London four examples of encephalocele in the anterior part of the skull. In the first case (Fig. 7) the tumour was of large size, involving the orbit and forehead. The right half of the frontal bone, the whole of the parietal and portions of the temporal bone were wanting, and no traces of the eyeball existed. The tumour was composed of softened brain-substance, and was supported by the squamous portion of the temporal bone, which was pushed forwards and outwards, at right angles to the malar bone. Over the cribriform portion of the ethmoid was a large cyst, filled with yellow transparent fluid. There was a hare-lip and cleft palate. The child lived four days.

In the second case (Fig. 8) the child was born, at full term, with a large tumour in the forehead, measuring, when distended, twelve inches in circumference transversely, and ten inches in circumference from before backwards.

FIG. 7



This tumour was the presenting part, and simulated the breech very closely. The medical man punctured it, and a teacupful of bloody fluid escaped; a deeper puncture gave exit to about a quart of clear serous fluid, upon which the tumour collapsed in great

part, and the delivery was effected. The child lived ten hours, fluid and particles of brain-

FIG. 8



matter coming away from the puncture during that time.

The third case was in a girl aged eleven, who at birth had a pulsating tumour at the root of the nose, evidently dependent upon

some communication with the interior of the skull, and probably connected with the anterior lobes of the brain (Fig. 9). I first saw her when she was five years old, and there was no material alteration at the later date. The tumour had expanded the nasal bones, and was presumed to depend upon some want of development of the base of the anterior fossa of the cranium, and probably of the cribriform plate of the ethmoid. This child had been taken soon after birth to an eminent surgeon to be operated upon for a supposed vascular tumour at the root of the nose, and was, I believe, the original of the figure which I show you in one of Mr. Hutchinson's plates. I regret to state that this girl came to an

untimely end in the year 1868, having come under the notice of a surgeon who did not recognise the nature of the case. He cut into the tumour with a fatal result.

The fourth case was in a boy of three years,

FIG. 9



and the protrusion was almost precisely similar to that in the last case as to position; but the tumour was more prominent, and about the size of a large marble (Fig. 10). During the first four months of life the sac

appeared to be nearly transparent, and at the end of that time Sir James Paget, under whose care the child then was, tapped it and evacuated a considerable quantity of fluid. Afterwards iodine injections were used on

FIG. 10



three occasions, and caused so much inflammation that serious consequences were apprehended; after this, however, the walls gave way, and a large quantity of fluid, looking like dirty water, was evacuated. Within twenty

minutes the tumour refilled, and since that time nothing had been done.

These cases of anterior encephaloccele have many features in common. There is a protrusion at the root of the nose, which generally pulsates. I show you two drawings which

FIG. 11



might have been taken from the same patient, and of one of these I can give you a history. The child, when an infant, was shown by the late Mr. Shaw at the Pathological Society in the year 1857. He was alive, and came before the Court of Examiners at the College

of Surgeons in 1883, and again in 1888. A very good idea of the deformity common to these cases is given by Fig. 11, which is taken from a photograph of a young man who was in this hospital, under the late Mr Berkeley Hill's care, a few years back. The unsightly projection in the region of the nose, giving an appearance somewhat resembling a double nose, is very characteristic of the affection.

Mr. Hutchinson reports one of the few instances on record of a dissection of this malformation. The case occurred under the late Mr. Bracey, of Birmingham; the child was a boy, aged two and a half, healthy and intelligent. The child's appearance was so hideous that its friends were very anxious that something should be done, and Mr. Bracey, thus urged, placed a silver wire round the neck of the tumour; meningitis resulted, and the child died. The larger portion of the tumour consisted of a protrusion of the anterior lobes of the brain, covered by the membranes and the integuments, which were natural in appearance. The smaller portion of the tumour was formed of a sac of membrane, apparently dura mater, crossed by bands of areolar tissue and filled with sub-arachnoid fluid. This, too, was covered with skin, which was here thin and rather bluish. This portion could be nearly emptied by firm and continuous pressure. The pulsations could

be felt and seen in the larger tumour; the whole increased in size with the child's crying. The macerated portion of the skull showed a large hole involving the frontal, ethmoid, and nasal bones, which had everted lips, and was big enough to admit two thumbs.

In the case of anterior encephalocele, still more than in the cases of simple posterior meningocele, any surgical interference is to be deprecated. It is hardly possible, I think, that any good can result from an operation; and, as you have seen, in the cases where it has been attempted, death has invariably resulted.

ON
AMPUTATION FOR TUBERCULAR
JOINT-DISEASE

GENTLEMEN,—You have seen just now in Ward No. 1 a patient aged sixteen, whom we saw for the first time this day week, and you will remember that on that occasion, as soon as we got to the bed, I pointed out the position the patient was lying in. He was lying on his side, anxiously grasping an attenuated thigh, and extremely careful that no movement of his knee should occur, and it was quite obvious that he had very extensive disease of the joint. Then also he was extremely emaciated and very miserable-looking,—in fact, he looked almost like dying.

The history is extremely interesting. Eighteen months ago the patient knocked his left knee against a kerbstone. It did not trouble him much at the time, but three months later the knee became swollen and very painful; he then went to one of the London hospitals and was operated on, and the patient says that his

knee-joint was scraped. Apart from the history, it is evident from the scar that the modern operation of erosion of the joint was performed, and it was, no doubt, the correct treatment to be adopted. He was in hospital for nearly four months, and then came out with the joint in plaster, and was sent to the country for a month. He kept the plaster on for another month, and then went back to the hospital to have it taken off. A month later the leg began to get bad again, but the patient neglected it and did not go to the hospital for some time, and when he did they took him in for another eleven weeks, and kept his leg in splints. During this time they managed to straighten his leg, but he went out and the leg got bad again. About two months later he went to the parish infirmary, and was there only a week, when he was told that his leg must come off. He then left the infirmary, and was at home for six weeks. The leg has been getting much worse since July last, and the knee has become more and more tender. The fact was that the lad would not submit to losing his leg, and in the end has drifted here.

I pointed out that it was obvious that the knee-joint was full of fluid, presumably pus. There were two sinuses discharging pus, one at each end of the old incision, which was otherwise practically healed; and there was also

another sinus lower down, from which pus was escaping. I did not at the time manipulate the joint, because I would not put the patient to unnecessary pain. The only thing to do for him was to take the leg off, and you will remember that I amputated his thigh last Wednesday.

There is this very important point to be considered, that we found, on examination of the lad, extensive tubercular mischief in both lungs. There was a cavity in each lung, and he spat up the usual purulent fluid so generally seen in advanced phthisical cases. Here, then, was a lad with advanced phthisis of both lungs, with a diseased knee-joint full of pus, and the question arose, should I or should I not operate? It is a very important question. In former years these patients were allowed to die miserably with the limb still on; but latterly we have found that by removing the source of irritation, in this case the diseased knee, you not only save the patient much pain, but also you, every now and then, succeed in restoring the health. The patient gets stronger, the tubercular mischief subsides, and these cases do sometimes get well. This patient was an extreme case; it was not simply a case of dulness under the clavicles, but the tubercular material had already broken down into a vomica, and it was therefore a very unfavourable case. The only chance for the patient was to

remove his limb, and that I did last week. Prior to the operation his temperature was exceedingly high, averaging 102.5° for the two days before the operation. After the operation the temperature began to fall a little, and on Friday the temperature was still lower. Unfortunately, however, it has now gone up again. I take it that this is not the result of the amputation, which is doing very well, but is due to the extensive nature of the disease of the lungs, which, of course, is not yet quiescent, if it ever becomes so.

This patient, before the operation, was really in a state of hectic. The word is very largely used by people who do not know what it means exactly; it means a continual fever, a febrile condition with exacerbations, and these exacerbations usually take place in the evening between five and eight. You will find that a patient with hectic fever becomes restless, his temperature goes up, his face becomes reddened, and, in particular, he gets that characteristic circular red patch on the cheeks, so often seen in patients suffering from hectic fever or phthisical disease. Some time from before midnight to the early morning he breaks out into a profuse perspiration, and then drops off to sleep, and wakes up in the morning somewhat better. That condition is exceedingly weakening, and it is worse of course if it is

aggravated, as it so often is, by diarrhœa; and in cases of this kind you notice very great emaciation, and also that the patient will pass high-coloured urine, which is somewhat scanty in quantity.

The pathology of heetic fever has been a matter of considerable dispute. Heetic fever does not occur until the discharge of pus from the surface; the mere fact of having a large chronic abscess, such as occurs in joint disease or disease of the vertebræ does not produce heetic fever; but the moment you open that abscess, or allow it to burst, then there is a drain on the system, and you are liable to have heetic fever occurring. It has not been recognised until comparatively lately that it is in all probability a state of blood-poisoning—really a chronic septicæmia; and the great point is to get rid of any septic element, and so improve the patient's condition. Let the theory be what it may, the practice is undoubted. The first thing is to get rid of the cause, and therefore it is that you amputate a diseased joint in such a case as this. But unfortunately in this patient the joint is not the only source of irritation, the lungs are affected as well, and they are an additional centre of mischief. But still I think I am justified in having amputated this patient's thigh.

Can you do anything more for these patients?

Well, you have of course to get rid of the cause, and you should also feed your patient up well. I have ordered him quinine, and I think quinine is good for every condition of septic mischief. I have ordered him 2 grs. of quinine three times a day; he has also been ordered some brandy, and when he is tired of that he is to have beer or wine, and if he can manage it I wish him to take also cod-liver oil. That will improve his condition; and for his sweating I have ordered that he shall be sponged with hot water and vinegar at night. Physicians in these cases use belladonna, atropine, or oxide of zinc, and mineral acids. I have more faith in the mineral acids than in the oxide of zinc, and I generally combine the quinine with the mineral acid. I use the old-fashioned vinegar and hot water sponging in cases of sweating, and then have the patient well dried; and you will find that after it he will generally drop off to sleep. The patient must not sleep in linen. I know myself concerning that fact, because twelve years ago I had a very serious illness and nearly died, and I sweated very profusely, and suffered from the misery of waking up in the morning with my night-shirt dripping wet. It is a point of importance that patients under these conditions should wear flannel, and it is a thing to bear in mind in all cases where night sweats occur.

Now a word as regards the precautions which we took in amputating the boy's thigh. In the first place I informed our anæsthetist, Dr. Dudley Buxton, that the patient was suffering from advanced phthisis, and he decided not to give him gas and ether, because the ether might irritate the lungs somewhat, and he therefore preferred to give him chloroform. That is a practical point which is worth remembering. Before putting the lad under chloroform I had two ounces of brandy and two ounces of hot water thrown into the rectum, to help the heart to resist the shock of the operation. It is a method introduced some years ago by an American surgeon, and I have used it extensively; and further, when the patient got a little faint towards the end of the operation, we again injected hot brandy and water into his rectum. I was also anxious that the patient should lose as little blood as possible, and therefore we used Esmarch's band round the foot and leg, stopping below the diseased knee; and then we put another band above the knee, carrying it up to the groin, and there we put a few extra turns to act as a tourniquet. I amputated by an anterior and posterior flap, and I was particularly careful to cut the bone as near to the joint as possible, my object being not to open the medullary canal. If you do that in any amputation you

necessarily add somewhat to the risk of the patient. I therefore cut the bone as low as I could, and having gone through the cancellous structure at the lower end of the femur we secured the vessels, tied the popliteal artery and vein, and I do not think that, on the whole there was an ounce of blood lost. We washed out the wound with carbolic and dressed it with an ordinary cyanide dressing, and it was dressed first on the Friday and again to-day. In a case of this kind it is important to provide thorough drainage, and you will remember that at the time of the operation I put a fair-sized drainage tube right across, with a safety pin at each end to secure it. At the first dressing we cut off half of that drainage-tube, and inserted it on the outer side, and next time we shall leave off the tube altogether. So far as the operation goes nothing can be more satisfactory, and if the patient had not advanced phthisis I should say that without doubt he would recover.

To go back to what was the condition when the patient went into the other hospital. He was doubtless suffering from what is called white swelling, or tubercular disease of the synovial membrane of the knee. I did not, of course, see the case then, but I should probably have done the same as the surgeon

did at that hospital; he made an incision below the knee, turned up the patella, clipped away the diseased membrane, and scraped any of the cartilage which was diseased. The boy says himself that his joint was scraped—that means that there was tubercular ulceration at one or more points in the knee-joint, which were doubtless scraped and treated with iodoform. Iodoform has a remarkable effect on the tubercle bacillus, which is the essential part of tubercular disease, and the great thing is to get rid of all the diseased tissue by applying the iodoform, so as to get a fresh start for the patient.

Let me remind you of a woman who comes here now and then, and whose knee-joint was operated on by the same method; you will remember that she first came here with fluid in the knee-joint, and possibly this lad had fluid first in his joint. The woman was twenty-three years of age, and had fluid in the joint, which I aspirated and apparently cured; but after three months she came back with advanced tubercular disease of the synovial membrane of the knee-joint, and I did the modern operation of erosion, which has a great advantage over the older operation of excision, inasmuch as you do not remove any more of the bone than is necessary, and therefore you get no shortening of the limb. This woman

got steadily well, and now she has a good stiff knee, and walks about perfectly well, and we see her from time to time.

In the early stage of tubercular disease of the synovial membrane blisters, or better, the application of the Paquelin cautery, so as to produce free counter-irritation, is of great service, and may be followed by careful strapping and immobilisation of the joint. A method which promises well is the employment of an iodoform emulsion, the anti-tubercular effect of which is well ascertained. A drachm of a 10 per cent. solution of iodoform in glycerine, with twice the quantity of water, is injected with a hypodermic syringe into the thickened synovial membrane at half a dozen places, and this is repeated at intervals of a couple of weeks, the knee being fixed on a splint. Careful massage may also be employed to remove the thickening of the tissues and to restore movement to the joint.

P.S.—The boy, the subject of this lecture, died three weeks after the amputation from progressive disease of the lungs and exhaustion. The stump did not heal, but the flaps retracted and the end of the bone became exposed.

ON

A CASE OF GANGRENE OF THE LEG

GENTLEMEN,—The patient I want to speak to you about this afternoon is one that has been in the wards for some considerable time. She was admitted on October 5, and was forty-seven years of age, and the history of her case is as follows:—On September 28, she was on the top of the stairs in her house, when she felt a sharp pain in the middle of the left foot and leg, as if knives were driven into her foot; at the same time she lost power in her left foot and leg, and fell down; then she remained in bed for nearly a week, till she was admitted here. Since the attack the pain has been almost incessant; when she had the attack her leg became as if it were dead, it was white and swollen; afterwards, pains like “pins and needles” were felt.

When the woman was first admitted there was nothing very obvious, except that all the minute venules of the back of the foot were injected. If you will remember, I pointed out

that there must be something interfering with the circulation in the deeper veins, and I was inclined to look on it as one of those cases of thrombosis of the veins of the leg, which we not uncommonly meet with in gouty people, and people who have not healthy vessels. It was found, however, on examination, that her left femoral artery did not pulsate, and it was quite clear, on more careful examination, that the left femoral artery was obstructed; it had become suddenly occluded, and that was the explanation of the case. We made at that time a particular note that the right femoral artery did pulsate; but a day or two afterwards we found that the right femoral had ceased to beat, so that she had occlusion of both the femoral arteries, and we did not know how far up the trouble might reach. The case was of course recognised as a serious one, and the question was what could be the cause? It seemed reasonable to suppose that it was a case of embolism, in connection probably with some heart disease, thus causing an obstruction in the artery which had blocked the vessel up. That turned out to be the case, and I have here the aorta and the two iliac and femoral arteries, and you see the clot from the aorta passing well down into the femoral vessels.

Our attention was now turned to the patient's heart, and two of the physicians

of the hospital kindly examined the heart, and they came to the conclusion that it was not a simple case of valvular disease, where a little piece of vegetation might have become displaced, but that it was more likely a case of contracted mitral orifice, where probably some clot had been formed in the left auricle, which clot must have apparently been driven through into the ventricle, and thence into the aorta. This proved to be the case, and there can be no question that these large clots in the arteries must have been cardiac; and we found in the left auricle a very considerable amount of clotting, some of which was certainly ante-mortem, and some doubtless post-mortem clot.

From a surgical point of view what was to be done? The only thing to be done was to try and prevent the occurrence of gangrene, and, accordingly, I had the limb wrapped up in wool, lightly bandaged, and the patient put into a horizontal position in bed. Within three days after admission, on October 8, the foot presented a mottled appearance and was quite cold; there was no sensation to be felt in it by the patient. By October 14 the foot was much darker, and the purple colour had extended on the outer side of the leg upwards; and above this, according to the notes, was a red inflammatory blush. The sensation was

completely lost over the dark purple area above mentioned, the toes were becoming shrivelled; there was still no pulse in the left femoral, but the pulse could be again felt in the right femoral artery.

On examining the amputated left leg, which you see before you, you will notice that it is an example of dry gangrene; there is mummification of the toes, and discoloration above that, extending up to the middle of the leg; at the posterior part the skin is apparently healthy, and at the point where it was amputated the tissues look quite healthy. I discussed the question of amputation at my visits. It was not a case of traumatic gangrene such as you meet with, generally, as the result of direct injury—say a compound fracture. It was not an example of the moist variety of gangrene, and particularly it was not spreading rapidly.

The parts in this case were quite dry, there was no evidence of septic trouble, no poisoning of the patient by her own secretions, therefore there was no object in interfering. I had, too, other reasons for not interfering, because in the first place there was blocking of the right femoral, and later, symptoms of blocking in the brain and lung. I mean that the patient became exceedingly heavy and slow in speech, and seemed to have lost consciousness to a great

extent. She was so bad at one time that I thought she would have died; however, she improved, and then she had an attack of lung trouble, one part of her lung being evidently solid from an infarct, but that eventually got better. However, I ventured at last, taking into consideration her condition, on November 4, that is a month after admission, to remove her left leg. It became obvious that it would never have been of use to her, and the gangrene seemed to have entirely stopped, it had made no progress upwards, and I amputated in what I hoped would prove healthy structures. I found when I came down on the muscles, that they had a curious exsanguine appearance, they looked almost like macerated muscle; there was no offensive smell, if there had been I should have amputated high up at once. The muscles had evidently undergone degeneration, and the tibial arteries were of course plugged. I completed the amputation below the knee, and I hoped she would have been relieved. Unfortunately, the wound soon broke open and became offensive, notwithstanding all possible care. It was quite evident that the muscular tissue had become gangrenous, and there was no hope of it recovering. She became rapidly worse, and died on November 20.

I digress here for a moment to call your attention to the fact that the right leg had

become cold and mottled on November 17; the right femoral artery, which had recovered pulsation, being now again noticed to be without pulsation.

We had a post-mortem in this case, and here are the results. There is the clotted external iliac artery, solid on both sides of the body, and how it could have ever beaten again on the right side I cannot say, but it certainly did; and on the left side the internal iliac artery is also blocked. Early in the case she had a bed sore on the left side. Now, with a patient lying on her back, it is usual for the bed sore to be on the sacrum, but this particular bed sore was distinctly over the left hip, and not on the part she was lying on. It may have been, of course, from the blocking of the left iliac. There is a piece of vein attached to this artery I have here, which you see is also blocked.

From the very first this case had a high temperature, it oscillated very considerably; it was either considerably above or considerably below normal, and latterly it was high.

With regard to the treatment, all we could do for her was to make her comfortable by giving her opium, injections of morphia at night when required. I did not think it was a case in which the indication was quite the same as in those cases to which we give opium

systematically, as in simple senile gangrene; there I look upon opium as the sheet-anchor for the surgeon. We gave this woman stimulants to help her heart to work, and to keep up her strength. The difficulty was to get her to take food at all.

This is a very unusual ease of gangrene. You may go a good many years before you see another ease like it, but you will often see a leg which looks like this amputated limb, and that will be in eases of senile gangrene. What happens is this: the patient will probably be over seventy, and the arteries will have become more or less calcareous, and then some trifling accident may occur, a little bruise of the toe—it has happened over and over again from cutting a corn or a toe-nail—and the patient applies to the surgeon because the toes have got mummified; they become dried up, and the gangrene spreads slowly up the leg.

The limb is generally darker than you see here, and not always so dry; it varies because if the arteries are alone affected, then dry gangrene occurs; but if the veins also are implicated, you are very likely to have moist gangrene. In this book, Sir Robert Carswell's "Atlas of Morbid Anatomy," you will see a case of senile gangrene depicted where the toes are all black, and to my mind they are too black, for you seldom have toes quite so

black as this in senile gangrene. What I wanted to show you was this, that above the part which is actually gangrenous there is a more or less developed inflammatory blush, which is part of the process of gangrene. There is inflammation first, which is shown by the ordinary symptoms of redness, heat, and pain, and then the gangrene is developed at the extremity, and the blush gradually ereeps up the foot. In a case like this we look for this inflammation, and it is commonly said that there is a line of demarcation, which I think students get rather a wrong impression about. On looking at the limb you see the gangrenous part and the blush continuous with it, and there is a line where the two join; but it is wrong to call it a line of demarcation, which it is not, and the only thing is to watch and see if the gangrene is extending. If the gangrene has come to an end, and if there is a permanent blush and nothing more, then I am content to call the junction a line of demarcation, but men seem to think that there is a regular, well-marked, recognisable line. It is not that, it is simply where the gangrene ends and the inflammation begins.

If the gangrene is stationary for a few days, then we do see a change; we should find a line of vesicles forming gradually round the limb, and running into one another; the skin

would give way, and there would be a groove of ulceration between the living and the dead tissues. It must be that this occurs at the expense of the living tissues, and you have thus a line of ulceration that may be very properly called the line of separation, which is an undoubted line, and it takes place between the living and the dead. This ulceration extends down to the bone, the tissues become somewhat retracted, and eventually the bone is exposed.

Shall you wait for that line of separation or shall you amputate early? Now there is a good deal of difference of opinion on this matter, and, for my part, if I have a case of *bonâ fide* dry gangrene from embolism or senile gangrene, and certainly in frostbite, I should wait for the line of separation to take place, and for the bone to be exposed; and I should then put on retractors, and saw through the bone as high as I could, and I believe, in that way, would be doing my best for my patient. But there are cases where the leg is affected with moist gangrene, the limb being in a moist condition with blebs of cuticle formed on it. The actually gangrenous part will be of a mottled purple colour, and above it there will be the process of moist gangrene going on. In these cases you must not wait for the line of separation; if you do, the chances are that

the patient will be poisoned by his own secretions, that he will get pyæmia or septicæmia from some form of infection, and that he will die.

Therefore in these cases one advises an amputation in the middle of the leg when the gangrene is only in the foot, because by that means you amputate in healthy tissue, and you hope to restore the patient with a short but useful limb. The same thing applies also to that curious form of gangrene which has been recognised only comparatively recently, that is the gangrene occurring in diabetic patients. In a patient who has gangrene, and you can find no ordinary cause, you should always examine the urine ; it is a gangrene distinctly connected with sugar in the urine, and is what is called moist gangrene ; the only chance in these cases seems to be to do an amputation high up, at or above the knee if necessary. Mr. Godlee has paid a great deal of attention to this disease, and I think that that is the conclusion he has come to ; I have seen him amputate in many cases high up, with the result of saving the patient's life, and that is the main point after all.

But supposing we had the rapidly spreading form of traumatic gangrene due to some septic poison, then there is no question about early amputation. Let me relate to you an instance

from my own practice some years ago as an illustration. A nurse, aged thirty-four, pricked her finger in laying out the body of a lady who had died of puerperal peritonitis. A few hours after the finger became swollen and painful, when she rubbed the spot with nitrate of silver and applied a poultice. The finger became more swollen, and the redness extended above the elbow, and she was very restless. On the fourth day I saw her, and found the whole arm swollen and red from her fingers to the upper third of the arm; two fingers were numb, and purple discoloration was beginning on the hand. I made free incisions into the hand, forearm, and arm, and nothing but bloody serum escaped. On the fifth day the hand and fingers were of a blue colour, there were bullæ about the limb, and the arm was more swollen. On the sixth day the condition had improved, and it was hoped that the gangrene might be confined to the forearm. In the afternoon, however, the patient became worse, and the inflammatory blush began to spread rapidly. I therefore amputated at once at the shoulder-joint, and the patient completely recovered.

In these terrible cases of spreading traumatic gangrene the only safe rule is to amputate early and high.

ON A CASE OF

FRACTURE OF THE BASE OF THE SKULL

GENTLEMEN,—I will commence my lecture by reading you a short account of this case of fracture of the skull from the house-surgeon's notes.

The patient was admitted at 3 A.M., having been knocked down by a cab, which was said to have hit him on the right shoulder and right side of the face. On admission he was unconscious, breathing stertorously, with respirations 30 to the minute. The pulse varied between 50 and 60. The conjunctival reflex was absent. The right pupil was moderately dilated, the left was contracted, and both were fixed. Blood was trickling from the right nostril. The skin was slightly grazed just below the right malar bone. Some urine had been passed, but no fæces. There was paralysis of the limbs and loss of knee-jerk. There was some discoloration of the skin just in front of the right thigh, but no

other marks of violence were noticed. An ice-bag was applied to the head, and grs. v of calomel were placed on the back of the tongue. Hot-water bottles were applied to the feet, the temperature being under 95° . The breathing varied, sometimes becoming normal in character, and at other times stertorous. In the night the patient made some movements with his left arm.

About 6 A.M. bleeding increased, and blood flowed freely from both nostrils and threatened to clog the pharynx, which was cleared by repeated sponging. It was now noticed that there was proptosis on the right side, with swelling of both eyelids and cheeks. On each side there was a marked fluctuating swelling occupying the inner half of the upper eyelid, of a purplish colour. The bladder was not distended.

At 8 A.M. the general condition of the patient was the same except that he was warmer, the temperature being 96.2° . There was proptosis on both sides, more marked on the right side, with increased swelling of the lids. The pupils were moderately dilated and fixed. The right naso-labial fold was less defined than the left. There was some drooping of the right angle of the mouth. The tongue was swollen and pushed over to the left. The bleeding was not so free. A Jacques catheter

was passed easily, and 14 ozs. of urine were drawn off. The urine was pale and acid; with a cloud of albumen. Knee-jerks were still absent. An enema simplex was given, but was returned without result.

From about 10.30 the patient's temperature gradually rose until 1 o'clock, to 99.2° . The pulse became more rapid and feeble, 120, respirations became shallower, several times the bleeding increased and necessitated sponging of the pharynx.

At 2.30 P.M., or about twelve hours after the injury, the patient died from failure of respiration; the radial pulse could not be felt. Heart-beats continued for three minutes after cessation of respiration.

At the autopsy, on reflecting the scalp there was extravasation of blood beneath the temporal fascia on each side, but none under the scalp, and no fracture was seen. On removing the roof of the skull, the dura mater was found to be unusually adherent; on the right side it was somewhat separated from the middle fossa, and there was extravasation of blood outside it of small size. On reflecting the dura mater, both temporo-sphenoidal lobes were covered by large masses of clot, the amount being larger on the right side. On the brain being removed, there was found a laceration of the dura in the right middle fossa

close outside the foramen ovale, about three-quarters of an inch long, but it had not torn the meningeal artery. The dura was then stripped off and the fracture examined; it was found to extend from one side of the skull to the other, through the middle fossa. Beginning on the left side in the temporal region, it followed the line of the great wing of the sphenoid to the sphenoidal fissure, then across the body of the sphenoid at the sella turcica, this part being comminuted, to the right foramen ovale. In the middle fossa the lines of fracture diverged, one extending upwards to the right temporal region, and sending a branch forward along the great wing of the sphenoid, as on the left side, to the sphenoidal fissure; the second branch extended across the roof of the tympanum almost as far as the lateral sinus, where it curved inwards to the jugular foramen. In the middle fossa the lines of fracture enclosed two large pieces of bone. The fracture of the petrous bone had lacerated the facial nerve, and opened up the internal ear. The membrana tympani, the malleus, and the incus were not damaged, but the stapes could not be found.

These notes form the history of a typical case of fracture of the base of the skull following a violent fall. The question now arises, how did that man fall, and how was the injury

inflicted? In all probability the man fell on one side of the head, and I should think, from the amount of injury, it is probable that he fell on the right side, and that the bone was broken by the violent impact against the pavement, and then that the force of the blow spread across to the left side, involving both orbits. On the right side it extended backwards to the temporal bone, the facial nerve was lacerated; and, though the tympanum was involved, the *membrana tympani* was not ruptured.

Bleeding from the ear is one of the symptoms for which we always look in any case of supposed fracture of the skull; but in this case, though that symptom was absent, there was still an extensive fracture. The reason for its absence was that the *membrana tympani* did not happen to be torn: the blood did, no doubt, find its way out of the tympanum; but it found its way out by going down into the patient's throat through the Eustachian canal, and so was swallowed. There was certainly a considerable quantity of blood in his pharynx, and that blood, no doubt, came from the ear, as I have said, through the Eustachian tube. Both the orbits were open, and there was a large extravasation of blood on both sides. Immediately after the accident there was a little proptosis of the right eye due to this

extravasation, and about 8 o'clock there was also proptosis on the left side, and at 10 o'clock the eyelids on both sides were suffused with blood. It was clearly seen from the first that nothing could be done, and that the man would die in a few hours; and he actually died twelve hours after the receipt of the injury.

These cases of fracture of the base of the skull with hæmorrhage occurring at the time of the accident are almost invariably fatal, but there are a good many cases of fracture of the base where there is no hæmorrhage at the time, and it is those cases which may get well.

The injury was produced in this case by direct violence. When a man falls from a scaffolding and pitches down upon his head, the vertex coming first against the pavement, the whole weight of the body of a heavy man, falling thirty or forty feet, comes upon the basilar process of the occipital bone and breaks it through, and that is one way in which fracture of the skull occurs. Fracture also occurs similarly in children, in those cases in which a child falls out of a window; and these cases, as a rule, die of laceration of the brain with fracture of the base of the skull. But the more frequent way is that a man, falling from a moderate height, strikes his head at some point or other, sufficiently severely to fracture

the bone, and then the fracture "runs round"; and here you see in this case that the fracture ran round, not only on the right side, but extended to the left, and opened up both orbits.

There is an old theory that a man can fracture the base of his skull by falling on his feet, but you must clearly understand that if a man falls from a height on to his feet, he breaks first his legs, and then his thighs, and that the pelvis and the vertebræ are fractured long before the base of the skull is affected; and, in fact, that it is impossible for the mere shock of falling on the feet to fracture the base of the skull. There have been very curious cases where the base of the skull has been fractured from patients falling violently on to the chin, sometimes not breaking the lower jaw, but driving the condyle of the lower jaw through the glenoid fossa into the skull and so fracturing the base, but they are very rare cases indeed. With regard to the different parts of the skull, of course the lines the fracture takes will depend entirely upon where the blow was struck. Sometimes the fractures run right through the orbital plate. Though the orbital plate is very thin, the horizontal plate of the ethmoid is much thinner, being about as thick as an egg-shell, therefore it is not very surprising that fracture occurs from

bodies pushed through the nose or from a blow on the front of the skull.

The symptoms the patient exhibits will vary much in different cases; in some they are simply those of concussion of the brain. The only thing, then, to say is that the patient has had a serious accident, that he was insensible for a short time and is now recovering, and we must be careful with him for a few days. I have seen such cases recover, although some days later I have been aware that there had been a fracture after all, and for this reason: the fracture may run through the temporal bone and involve in some way the aqueductus Fallopii, through which the facial nerve passes; and the proof of the fracture having occurred is that, ten days or so afterwards, the patient gets paralysis on that side of his face. The fissure, if it runs through the temporal bone, becomes repaired, and repair may occur with an excess of callus, which causes compression of the facial nerve in the canal and produces paralysis. In another fortnight, when the callus is absorbed, the nerve resumes its function and the patient recovers. It is well to be on the safe side, and to prognosticate what may possibly happen, for if you have said that there is nothing the matter with the patient, and that he is able to go about his work, on anything happening, such as this facial paralysis,

there is much surprise expressed at such an event supervening. But if you have warned the friends and the patient, as you ought to do, that certain symptoms may develop and that the patient should not go to work, on anything untoward occurring you are on the safe side.

In the case we are considering to-day there was a fracture of the base of the skull and extensive hæmorrhage. Where did that hæmorrhage come from? Bleeding may be from the middle meningeal artery, but the effusion in that case is outside the meninges, and the blood accumulates and forms a clot producing well-marked symptoms of paralysis. But in this case the meningeal artery was not torn, and the hæmorrhage came from the brain, for there was no doubt that there was some laceration of the brain substance here, which would naturally occur in such a violent injury. The brain is very vascular, and it is easily to be understood how the blood in this case has permeated all the surrounding tissues. You can understand how the blood first formed a clot, producing those signs of paralysis of which we have heard, and lastly it would find its way into the orbits, and produce the proptosis which was so characteristic in this case. In such a case you cannot get at the source of the hæmorrhage, you cannot trephine; you can

only let the patient be, and very soon the end comes.

In the slighter cases, where there is a fracture of the base of the skull, and some irritation from the laceration of the meninges, you are apt to have the occurrence of meningitis. We do not happen to have had a case of that kind lately in the wards, but it is well always to bear in mind that these cases of head injury are apt to take on meningitis within forty-eight hours after the injury, and you ought to anticipate it. The way to anticipate this meningitis is to clear the bowels out, and in the second place to put an ice-bag on the head, to ensure quiet, and insist upon absolutely starvation diet. Mistakes are often made in these cases by not looking carefully after the nurses. Nurses with the best intentions sometimes force nourishment on such patients, but judicious starvation of a brain case is really one of the most important elements in the treatment. By starvation diet I mean milk and water and nothing else for the first forty-eight hours or so, and then perhaps a little bread and milk, and then very gradually and very slowly to increase the diet. You must be guided by the temperature and the general symptoms before you let the patient take anything really solid in the way of nutriment.

With a patient who is getting over the first

shock, and with meningitis developing, you will find that his temperature goes up. At first, when entering the hospital, the temperature of these patients is below normal, they are suffering from shock; after that the reaction causes the temperature to go up, and in these cases purgation and ice-bags are good treatment. But when you find the patient with a temperature going up to 103° and 104° , with a good deal of headache, a quick pulse, and a great deal of heat on feeling the head, you may be sure that he is developing meningitis. The patient will probably die if you are not prompt in your treatment, and you will find at the post-mortem the surface of the brain smeared with pus which the meningitis has caused. I do not say that in every case of threatened meningitis you will be able to prevent it, but the tendency is nowadays, I think, not to be active enough in the treatment. You should clear the bowels out and use an ice-bag, and if the temperature keeps up administer calomel.

Calomel was formerly given very freely, but surgeons of the present generation seem to have lost their faith in it; and yet if you have a case of head injury where the temperature is keeping up and the patient is in a highly feverish condition, and probably developing meningitis, by administering calomel until the gums are affected you may possibly

save your patient's life. I advise you to give 2 grs. of calomel every four hours without any opium. If you give opium in these cases you complicate them slightly, and you are not sure how much of the symptoms is due to the opium and how much to the coma following the injury. In this treatment by calomel, when diarrhoea has developed, you must reduce the dose of calomel to every six hours, and then watch for the gums becoming affected. The patient must be given calomel to just such an extent that, while affecting the gums you do not actually salivate the patient, but he must be brought under the influence of the mercury. I have great faith in mercurial inunction in cases of syphilis, and in cases of head injury mercurial ointment rubbed into the thighs and loins will do good.

I have seen many patients who have got well under that treatment. The answer to that of course is, Would not the patient have got well without any calomel? I can only say that possibly he might; but when you find a large number of cases not treated by calomel dying of meningitis, and that every now and then a patient who does take mercury recovers, I think it reasonable to draw the conclusion that the mercury had something to do with the cure. I would therefore recommend you, in all appropriate cases where a high temperature

exists with a full hard pulse, to give mercury ; and I would not hesitate to bleed in a suitable case by leeches or from the arm.

As to the flow of blood from the ear when the patient is first admitted, the cases in which this occurs are by far the most common ; there is more or less severe concussion of the brain, and then the bleeding is noticed from the ear. If this bleeding occurs in some quantity it is a matter of great consequence, but the mere passage of a little blood from the ear may be nothing ; a mere laceration of the lining membrane of the ear may cause it. If, however, the blood marks the pillow, and if there is a discharge of a watery fluid from the ear as well, there can be no doubt that it is a case of fracture of the base of the skull with escape of the cerebro-spinal fluid. There have been many disputes concerning this clear, watery fluid ; it was said to be simply the serum of the blood, then some said it was the liquor Cotunnii from the labyrinth of the ear, but now it has been proved that the fluid is the cerebro-spinal fluid, and the explanation of how it gets out is very simple. If you examine the skull you will find the internal auditory meatus, with a process of dura mater containing in it the auditory and faeial nerves, and a fold of the arachnoid going round the nerves. That process is prolonged upon the nerves into the

meatus to the point where the auditory and facial nerves separate. The fracture in the temporal bone passes through the petrous portion of the bone across the tympanum, and tears through that little process of arachnoid upon the nerve. The fluid therefore gravitates from the subarachnoid space into the tympanum, and finds its way out of that cavity, and in the particular case before us to-day it was down the Eustachian tube; but as the membrana tympani is generally torn through, it usually comes out of the ear. The pillow is noticed to be wet with the watery fluid, which is recognised at once as the cerebro-spinal fluid.

Until quite recently we were content to let that cerebro-spinal fluid run away, perhaps examining it sometimes to see that it really was cerebro-spinal fluid, but nothing was done to these cases and patients were allowed to continue to die from septic meningitis. However, at last it was suggested by some one that if the external auditory meatus were cleansed, and if it were plugged with an antiseptic dressing to prevent septic material being introduced into the meninges, it would probably be a great advantage. Accordingly, nowadays, cotton wool is dipped into carbolic acid lotion and wrapped round a probe, and with it we wipe out the external auditory meatus. I advise you to do it with a probe and not with a syringe, because by syringing you might drive

some of the deleterious material into the cavity of the cranium. Having carefully mopped out and cleaned up the meatus in that way, you blow a little iodoform into the cavity, and then put a small piece of iodoform gauze or wool into the auditory meatus. After a few hours that gets soaked with the fluid, and then it is renewed. There is no question that since this practice came into vogue, some ten years ago, the mortality of these cases of fracture of the middle fossa of the skull has been greatly reduced by this means.

In all these cases, if things go well, the fluid runs through the fracture for some days and then stops, and the patient gets gradually quite well; but throughout the case there is always a danger of meningitis, and after he is well you must be extremely careful to guard against exposure to the sun. These patients are very apt, having been kept on very low diet for a long time, to take some alcoholic liquor directly they can, and if there is one thing that upsets these head cases more than another it is the taking of liquor of any kind whatsoever. Merely a pint of beer will give these men a bad headache, make them sick, and there may be further mischief. You will find that the tendency for liquor to "fly to the head" remains for a very long time, and that often these men ever afterwards cannot take the amount of liquor they did before the accident.

ON CASES OF EPITHELIOMA AND RODENT ULCER

GENTLEMEN,—We have lately had in the wards a good many cases of epithelioma, and I want to draw your attention to some of their leading features, and to say a few words as to the diagnosis of the disease and its treatment.

In the first place, let me say that epithelioma, otherwise called epithelial cancer, is a disease which affects various parts of the body, and somewhat differently in different positions. We have epithelioma of the mucous membrane and skin of various parts, particularly at the junctions of the skin with the mucous membrane—for instance, the lip, the nose, the penis, and so on; and in all these parts the disease is the squamous epithelioma. I may say that I am going to confine my remarks to that variety, because I have nothing to say to-day about the columnar epithelioma, which occurs only where columnar epithelium exists—viz., in the intestines, and in the antrum of Highmore.

The name "epithelioma" is of comparatively recent origin; if you look into the older books you will find that the word does not occur. Within the last forty years epithelioma or epithelial cancer has been differentiated from other varieties of ulceration, more or less malignant, and the fact that it has been recognised as cancer has had the effect of very much increasing the number of cases of cancer which are reported as causes of death by the Registrar-General. I have a little extract here showing what was the number of deaths from cancer reported by the Registrar-General for Great Britain in the year 1881. He reported 4611 males and 8931 females, making 13,542 deaths from cancer. Now, of course, under that word "cancer" are included scirrhus and medullary and all the varieties of cancer, which we find particularly in the female organs, the breast and uterus. Therefore, it is not surprising that the deaths of the females are double those of the males. In 1892, eleven years later, there were 7137 males and 12,296 females, making altogether 19,433 deaths from cancer of different varieties. That bears out the impression which most surgeons have, that cancer, and particularly epithelial cancer, is considerably on the increase.

I have no means of knowing whether cancer of the uterus is increasing. Cancer of the

breast appears to be as frequent as it used to be, but I have not the slightest hesitation in saying that, in public and private practice, every surgeon must see more cases of epithelioma than in former years. It may be said that we have advanced in our power of diagnosis, that the disease is more thoroughly studied, and therefore is more frequently recognised and reported; but, apart from that, there can be no doubt that there are more cases of epithelioma, and I find that the Registrar-General acknowledges this. He says: "Among men there has been a large increase in diseases of what may be called the upper organs of the digestive system, in the mouth, tongue, pharynx, and fauces, whilst among women there has been no such increase, but on the contrary a falling off."

To what, then, are we to attribute this increase of epithelioma in the upper part of the digestive system? I believe there are two main causes; one is inveterate smoking, that habit having become much more common of late years. The constant use of tobacco, particularly in regard to the tongue, is the first of these two causes, and one of the cases I have to mention to-day is very conclusive on that point. The next element is the great spread of syphilis among the populace; and there can be no doubt about that, I am sorry to say. This I attribute in a great degree to the fact that in

the army, owing to the foolish abolition of the Contagious Diseases Acts, syphilis has become more rife; and that short service soldiers who have become subjects of syphilis marry and convey syphilis to their wives and children, and thus spread it among the populace.

Let us consider what are the characters of the disease called epithelial cancer. At first, owing, in the majority of cases, to some local irritation, there is an over-development of the cell element, which tends to form columns and grow downwards; and then we have a certain amount of induration, and eventually we have ulceration, with the characteristic eversion of the edges, which we see so commonly in all the cases of epithelioma. In addition to that, and at varying periods, we have the gland implication; in some cases the glands become involved very early, in others comparatively late, and it is curious that the position of the cancer seems to affect this a good deal. In the lip, as a rule, it is a disease of old age and chronic growth, slowly affecting the glands. In the tongue, which is a much more vascular part, it is a disease of middle life and even of young subjects, and the glands are rapidly affected—so much so, that it makes one almost despair of success in operating.

Let us take those cases of epithelioma of the lip that have come under my care lately.

There was an old man of seventy-three admitted here on May 28. You will remember that he was sent up from the country, and the history was that he had noticed a crack on the lower lip five months ago, and he put it down to the cold weather. The sore got bigger, some ointment was applied, and then he was told to come up to the hospital. He was an elderly man, and in this photograph you will see a small, hard, ulcerated mass on the edge of the lip; and that is the common appearance of epithelioma of the lower lip. No doubt in most of the cases you can find that there has been a crack which has been irritated by the pipe, and that is the explanation why epithelioma of the lip is more common in males.

We had another man here who was fifty-eight, and was a sweep. (Let me draw your attention to the fact that, though we do not nowadays see epithelioma in connection with sweeps, in former years "chimney-sweep's cancer" was a well-known form of epithelioma attacking the scrotum. The same thing occurs in millers, the black soot and the white flour seeming to be equally irritating to the scrotum.) This man had something on his lip which was not really an epithelioma, but only a papilloma, by which we mean a wart. He had irritated his lip, no doubt, with the soot, and there was a little warty growth in which there was no element

of epithelioma; but the border line between epithelioma and papilloma is by no means well marked. I have myself seen a case, in private, of a man who had a warty growth or papilloma of the tongue for some years without any inconvenience, and then all of a sudden it began to grow, and when he came to me, a few weeks afterwards, there was a well-developed epithelioma in the tongue, which I removed with temporary success, but of which he died eventually. The microscopical examination of the specimen showed well how there may be papilloma on the surface, and then epithelioma developed in the deeper part owing to the constant irritation. That irritation is at the bottom of the occurrence of the epithelioma. If you take any part of the body, and sufficiently irritate it, I believe you may develop an epithelioma in an otherwise healthy person.

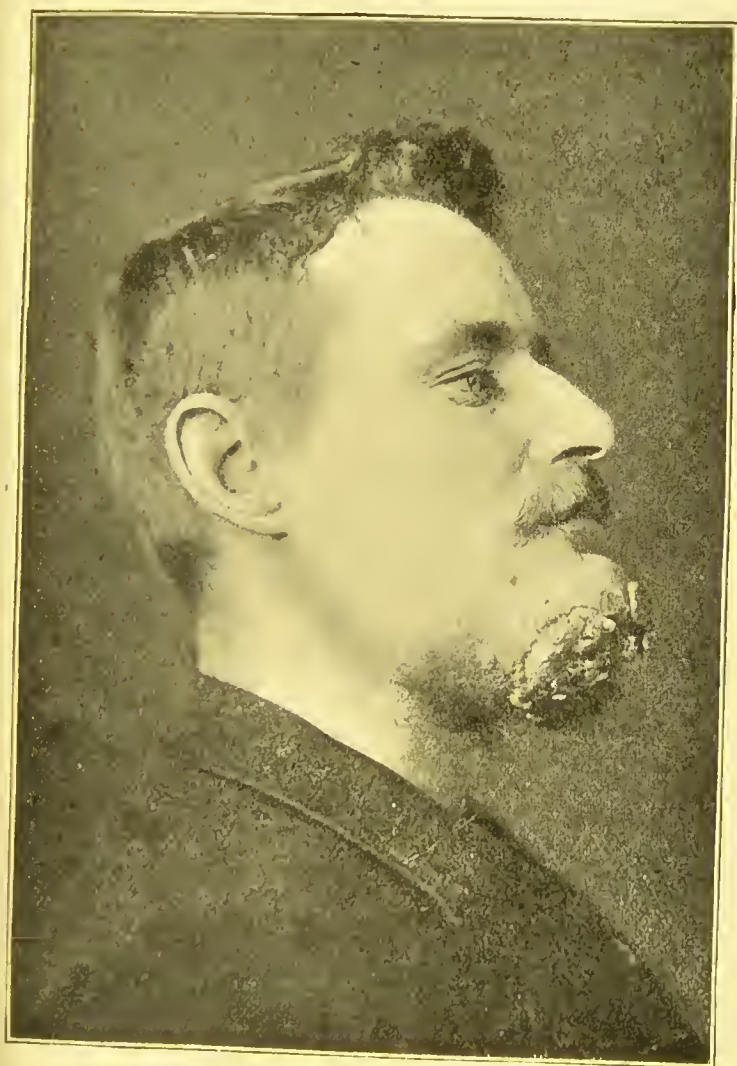
I have some photographs here illustrating some points which I have not been able to give you in these cases. Here is the youngest case of epithelioma in the lip that I ever saw. He came among the out-patients and was only eighteen years old, and I thought it impossible it could be an epithelioma and that it must be syphilis, and I treated him with iodide of potassium; but he did not improve, and I took him to Sir John Erichsen, who admitted him and removed the growth. It was no doubt

epithelioma, and the lad did not live many months afterwards.

Here is another sad case of a young fellow, only twenty-nine years of age, who had an operation done upon his lip for epithelioma in the year 1889 in the country. He came under my care in November 1891, in the terrible condition you see here (Fig. 12); with a mass of disease protruding through the skin. Although there was nothing wrong in the lip, the scar being quite healthy, the man was really miserable from the condition of his chin, and I thought it only right to try to relieve him. I was encouraged to do that by a case I had some years before in an old man (Fig. 13). There was an enlarged mass on the chin which had begun to ulcerate, and which evidently would have killed the patient. On turning it over in my mind to see if anything could be done, I thought it best to turn back the skin and saw the chin away. I did so, with, however, only temporary relief, for finally recurrence took place. So also was it with the young fellow whose photograph I show you. I removed the whole of the disease as far as I could see; but he did not live many months afterwards.

Epithelioma may attack any part of the face. Here is a photograph showing a terribly extensive epithelioma of the side of the face and

FIG. 12



Epithelioma of the chin following a successful removal of epithelioma of the lip.

cheek (Fig. 14). That was a case—I do not remember the date—in which I declined to do anything. There was œdema already of the

FIG. 13



Epithelioma of chin.

eyelids on that side of the face, showing that no good could come of interfering.

Here is a woman with a mass of epithelioma on the bridge of the nose, and that I was able to take away with good result (Fig. 15). She

FIG. 14



Extensive epitheliomatous ulceration of the cheek.

was forty-two years of age at the time of the operation, which was in October 1887, and I have never heard more of her. One always hopes, when one does not hear, for satisfactory results, but it is not likely that she has gone on for ten years without further trouble.

There is another disease, of which I believe we have an example here in the ward now, which is called rodent ulcer. Now I allow that it is very difficult to be sure in any case whether it is rodent ulcer or whether it is epithelioma. I am inclined to consider and treat, as rodent ulcer, cases which occur in the upper part of the face in patients somewhat advanced in life. That is an elastic rule, you may say. So it is; but when you find a large number of these cases going through a slow course without any glandular enlargement, then you may fairly say they are cases of so-called rodent ulcer or rodent cancer, for both words are used, which may or may not be varieties of epithelioma, but which have clinical features peculiar to themselves.

The patient is an old man of sixty, who has been well up to the present illness. A spark from a fire flew on to his face, causing a little burn, two years ago; and later a wart was established in the scar. The wart was burnt away, and a deep ulcer resulted. Six weeks ago the wound was nearly healed, but it has grown rapidly up to the patient's admission

FIG. 15



Epithelioma of the skin of the nose.

here. He has got a warty growth of the eyelid which I have not interfered with. Below was a large protruding mass not unlike the drawing which I show you here from one of Hutchinson's plates. The protruding mass with an ulcerating centre I treated first by scraping and then by caustic paste; and as I said in the ward just now, I have not got rid of it all, but I shall scrape and caustic it again. It is above the level of the mouth; there is no suspicion of glandular enlargement; it is evidently slow, for two years have elapsed since the original injury, and I hope, therefore, for a permanent cure.

You must bear in mind there are two distinct forms of this disease: there is the fungating rodent ulcer shown in this plate of Hutchinson's, and again there is the ordinary ulcerating form sometimes known as Jacob's ulcer, after the Dublin surgeon who first called attention to it. Placed side by side, you will see the difference in these plates.

If you look at the clinical history, these cases are chronic and live for many years, though not usually getting quite well; whereas in true epithelioma two years see them out generally.

The treatment, of course, is the same for both diseases—cut it out if you possibly can, and where you cannot, scrape it thoroughly

and apply caustic paste, and with care and trouble you may hope to have a firm cicatrix; I have seen cases which cicatrised and got perfectly well.

With regard to the cases we have lately had of epithelioma of the tongue—first, there was a man who was a musician attending here during last winter. You will remember him because he played the oboe, and he showed us that after the first operation he was able to play his oboe; but his disease has progressed and he is not now able to play it. He is only forty years of age. He had syphilis when young; there is no history of phthisis, and he was well nourished when admitted. There was marked epithelioma of the tongue on one side, and also a gland under the jaw. The operation I did was on November 25. I took away first the gland under the jaw, and then I removed the side of the tongue by splitting the organ down the middle, then clamping the piece I was to remove and cutting it off, and tying a ligature behind the clamp before I took it off. The man did well, and he went out, and, as I say, he came here more than once to see us, and showed us that he could play his oboe; but recurrence took place, and I saw him at my house in April last. There was evidently recurrence in the tongue itself, and so extensive that I told him that he had better not have

anything further done. It seemed to me that the risk from an extensive operation would not be justified, and that he would live longer if he were let alone.

Now we come to the case of a woman with epithelioma of the tongue, which is uncommon. She is only thirty-eight years of age. She had a distinct history of syphilis, and therefore I was particularly on my guard to see that the disease I was interfering with was undoubtedly epithelioma. I had no doubt whatever about it. Accordingly, in her case I did the same operation I had done in the man's. On October 15 I took away half the tongue; she made a good recovery, and she has been here quite lately with a tongue perfectly well, though the microscopic evidence was conclusive that it was epithelioma. When she came a short time ago she was extremely hoarse, and, knowing that she had been syphilitic, I put her on iodide of potassium, and her voice improved. You may say that possibly I made a mistake and removed a gumma; but I am sure I did not. It was a syphilitic tongue on which epithelioma had developed, and that is a very important point to bear in mind—that these gummatous tongues after a time are apt to become epitheliomatous. That is the explanation when a patient says that he had had a sore tongue and took certain medicines and

improved. There is no doubt that these gummatous cases, in which epithelioma is doubtful, do improve under iodide of potassium. You get rid of the syphilitic but not of the epitheliomatous element—that goes on growing, and an operation becomes inevitable.

The next case is an extremely interesting one, because we have the opportunity of seeing the record of it in a very early stage. It is a man who was in the Fire Brigade, who was admitted here on May 28 with a well-marked epithelioma of one side of the tongue. I will recall to your recollection that he was sent round from the skin department, where he had been attending for some time, and had been taking iodide of potassium, and for a time he had improved; but then he had ceased to improve and he was sent round to me, and I had no hesitation in saying at once that I was quite sure that the tongue had become epitheliomatous. I had a talk with Dr. Crocker on the case, and he has kindly lent me this plate from his Atlas, because there is the man's tongue drawn two years ago, when he went to Dr. Crocker with a well-marked leucoplakia of his tongue. The man told me that when a sailor he was in the habit of smoking and chewing tobacco, and, as the result, the surface of the tongue had become chronically inflamed, thickened, and whitened, and showed very well

indeed the appearance that we call leucoplakia. The man's tongue ulcerated, and he went back to the skin department. On hearing that he had had syphilis they naturally put him on iodide of potassium. By the time he came to me it was a well-marked case of epithelioma, and I removed it by the same method I adopted in the other cases. There was no enlarged gland, and I believe, therefore, that he may have a long period of immunity; I should be sorry to say that he will be permanently relieved, though I was well beyond the disease. The microscope showed that it was an epithelioma.

The last case that I will mention is one of epithelioma of the penis. It is not very common, but occurs from time to time, and generally in elderly men who have had phimosis. It is undoubted that phimosis seems to be a starting cause of epithelioma of the penis. You can easily understand that, if the foreskin is never drawn back, the smegma preputii becomes rancid and irritating, and sets up ulceration which may eventually become epitheliomatous. That is one great argument for early circumcision. The disease does not occur generally early in life; the foreskin being long may lead to other troubles, but epithelioma does not as a rule begin till after fifty. There is an intractable ulceration about the penis,

generally involving the foreskin and the glans, and in this case I was obliged to amputate close behind the glans penis. Epithelioma of the penis is not a very virulent disease. If you go well behind the disease, I think you have more chance of permanently relieving epithelioma in the penis than you have in many other parts of the body. There were no enlarged glands in the groin in this case, and I hope, therefore, that we may have permanently relieved the patient.

You will see from what I have said that we have had a considerable number of cases of epithelioma altogether; and let me say that the great point is to recognise the disease early. It is every one's duty, if they get a case of ulceration of any part of the skin or mucous membrane which resists treatment, to remove it. Of course there are cases which are cured readily enough, syphilitic ulceration particularly, and there are others which are to be treated by cleanliness and slight stimulation. But it is wrong to allow a patient to continue for weeks and, I am sorry to say, for months, with an intractable ulcer of any part of an epithelial surface; and as soon as the profession and the public come to the understanding of that, the more thoroughly will our practice be successful. In hospitals we have the severe cases sent up from the country, and it is for you,

gentlemen, when you become practitioners, not to ignore your cases, and hope they will get well under ointments, &c., but to make an early diagnosis, and watch a case for a short time only and see whether it improves; and if it does not, then to remove the ulcer.

ON
THE DISTAL LIGATURE IN THE
TREATMENT OF ANEURYSM

WE are now within two years of the end of the nineteenth century, and no doubt the progress of surgery during that period will be summed up by more or less competent persons. With the view of contributing to accuracy in dealing with the treatment of aneurysm, I wish to record a few facts relating to the use of the distal ligature, and to give my personal acquaintance with the subject. I am induced to do this because I find in the most recent works on surgery various inaccuracies, and I also note a tendency to ignore historical facts which are of interest.

Brasdor is credited by Boyer with having proposed, at the end of the last century, to place a ligature on the distal side of an aneurysm, instead of on the cardiac side as recommended by Hunter. Desault was in the habit of quoting Brasdor's proposal with approval, but never carried it into practice.

Desehamps, his eotemporary, first applied a distal ligature in a ease of large femoral aneurysm, but the tumour inereased so rapidly in size that, four days later, the old operation of opening the sae (Antyllus) was performed, and the patient sank from hæmorrhage. Sir Astley Cooper adopted the operation in a ease of aneurysm of the external iliae, tying the eommon femoral, and the tumour diminished considerably, but eventually burst and killed the patient.

James Wardrop now took up the subject, and in 1825 tied the eommon earotid for aneurysm of the root of that vessel with suecess, the patient being alive and well three years later. In 1826 Wardrop had a seond similar case, but the patient died four months later from eauses uneonneeted with the operation, and the post-mortem examination showed no distinet aneurysm, only "a manifest dilatation" of the earotid corresponding to the position of the tumour present before the operation, and the artery was pervious throughout. Wardrop was followed in 1827 by Lambert, whose patient died two months later from hæmorrhage at the site of ligature, and by Bush, of New York, whose patient was eured.

In 1827 Wardrop performed what he termed his "new operation" by tying the third part of the subelavian artery in a case of innominate

aneurysm, where the carotid had ceased to beat, and was supposed (erroneously) to be obliterated. The patient (Mrs. Denmark) was greatly relieved, notwithstanding the fact that pulsation in the carotid recurred on the ninth day and persisted. She survived over two years.

It is with this operation, in which the open branches of the subclavian intervene between the ligature and the aneurysm, that Wardrop's name is usually connected, whereas Brasdor's name is applied to the ligature of the common carotid, where no branch intervenes. It is obvious, however, from Wardrop's own words,* that he regarded the obstruction of the carotid as an important preliminary to his proceeding, and later on (p. 87), he says, "it surely would be advisable to imitate Nature in this respect, and to place the final ligature on the carotid in preference to the subclavian. . . . When under these assumed circumstances the carotid has been tied, the propriety of afterwards placing a ligature on the subclavian must be decided by the effects produced on the aneurysm."

Wardrop's proposal of tying the common carotid in cases of innominate aneurysm was adopted by several surgeons, with more or less success, but his suggestion of consecutive ligature of the third part of the subclavian was not followed till 1836-38 by Fearn, of Derby, whose

* "On Aneurysm," p. 61.

beautiful preparation in the College of Surgeons' museum shows that a cure of the innominate aneurysm had been effected. Wickham tied both vessels consecutively in 1839 unsuccessfully, and Malgaigne tied the carotid and axillary consecutively in 1845 unsuccessfully. In 1843 Rossi for the first time tied both the carotid and subclavian simultaneously, but appears to have placed his ligature to the inner side of the scalenus, thus tying the first part of the artery. Death followed in six days from insufficient blood supply to the brain. Cuvellier tied both vessels simultaneously in 1859, but his case was not published till much later. The patient died.

In November 1865, at the Westminster Hospital, I tied the right common carotid and the third part of the subclavian in a woman of thirty, suffering from what I and many other surgeons believed to be an innominate aneurysm.* She recovered from the operation, and her condition greatly improved, the tumour subsiding and all pressure symptoms disappearing, but pulsation never being arrested. I brought the case before the Royal Medical and Chirurgical Society in December 1866,† and it excited a good deal of discussion, but it was not published in the *Medico-Chirurgical Transactions*. My patient was a drunkard

* *Lancet*, December 2, 1865.

† *Ibid.* January 5, 1867.

whom it was impossible to control, and, as a result of her excesses, after about two years the tumour began to increase, and eventually the aneurysm burst externally in December 1869, more than four years after the double operation. The aneurysm proved to be purely aortic, involving the ascending portion of the arch, the innominate not being involved in the sac. The preparation is in the museum of the College of Surgeons, and an account of it, with a drawing, is given in the Pathological Society's *Transactions* for 1870.

In a paper published in the *Lancet* of July 2, 1870, I gave the details of the above interesting case in full, and will quote one passage from it: "The preceding case appears to raise a very important question in practical medicine and surgery—whether in cases of aneurysm of the arch of the aorta it is not possible to afford relief by surgical interference. There can be no question that my patient's urgent symptoms were relieved by the double ligature, and that her life was prolonged very considerably under the most untoward circumstances. Dr. Cockle has already * urged ligature of the left carotid in cases of aortic aneurysm which are making progress in spite of medical treatment; and when the disease involves the transverse portion of the arch I should be inclined to

* *Lancet*, April 10, 1869.

follow the suggestion as regards the left carotid. But when the disease involves the ascending portion of the arch, I believe the only hope of success will be in tying both the right carotid and subclavian, so as to diminish as far as possible the current through the innominate."

My example of applying double simultaneous ligatures in cases of presumed innominate aneurysm was followed by several surgeons* with varying degrees of success; and in 1877 Mr. Barwell thus operated upon four patients, one of whom died from the anæsthetic, and three survived for various periods, one as long as two years, the aneurysm proving to be mainly aortic, so that all are claimed as having been cured. Mr. Langley Browne also had a successful case in 1881, which survived for two years, and in whom all symptoms of aneurysm subsided. I did not myself have the opportunity of repeating the double ligature until the year 1887, when a patient with presumably innominate aneurysm was transferred to my care by Dr. Bastian. For the following notes of the case, which have not hitherto been published, I have to thank Mr. Drew, late Surgical Registrar of University College Hospital.

F. W., male, aged thirty-three, admitted to

* *System of Surgery*, vol. iii.

University College Hospital under Dr. Bastian, October 18, 1887, complaining of pain in the neck and shoulder on the right side, and difficulty in breathing.

Previous History.—Temperate; had served in the army for eight years, and subsequently as a porter at Covent Garden, where he often had to lift heavy weights. About ten years before he contracted syphilis, and received a six months' course of treatment.

Present Illness began, twelve months before admission, with pain of an aching character in the right side of the neck, gradually increasing in intensity. The pain is situated at the level of the angle of the jaw. About six weeks ago difficulty in swallowing and weakness in the voice came on, and also a cough, the latter being occasioned by the constant feeling of something to be coughed up. During the last three months he has had rheumatic pains in both shoulders, extending down the arm on the right side, and also an aching pain at the junction of the clavicle and sternum. The swelling over the right collar bone had been noticed for a fortnight.

Present State, October 20, 1887.—Powerfully built man, well nourished; arteries rather fibroid; pulse 68, regular, full, and high tension; symptoms as above. On examination the sternal end of the right clavicle is pushed

forwards, forming a distinct swelling; the swelling pulsates in an undulatory manner from below upwards. Pulsation of a heavy heaving character can be felt, no thrill is present, the pulsation extends into the supra-sternal notch. The percussion note over the upper half of the manubrium is wanting in resonance, and over the swelling is quite dull. There is a distinct systolic murmur over the swelling, and the second heart sound is distinctly heard. No displacement of the heart's impulse, which is heaving. Cardiac dulness not increased; the first sound at the apex loud and booming, and second sound distinctly heard. No stridor present when lying quietly in bed. but on movement there is distinct inspiratory and expiratory stridor, and a few rhonchi are heard over the chest. The patient was under observation in the medical wards for six weeks, and was treated with iodide of potassium, rest, and ordinary diet. The pain continued severe, and there was some weakness of the right shoulder. The other symptoms remained the same, and the patient was transferred to Mr. Heath.

Operation.—On December 7, 1887, Mr. Heath tied the subclavian artery in its third part. There was no difficulty in the operation beyond some venous bleeding, which was arrested by ligature. The vessel was tied with carbolised silk, and the wound closed with

drainage. The common carotid was then tied just above the omo-hyoid.

After-History.—The wounds healed by first intention. There were no unfavourable symptoms after the operation, except that the cough was troublesome. On January 16, 1888, the swelling at the right sterno-clavicular articulation was much smaller, and the pulsation less marked. The cough was more troublesome, and it was suggested that extension of the deeper part of the aneurysm had occurred. This continued until patient left the hospital on January 27, 1888. The breathing was much better, and the difficulty in swallowing had nearly disappeared.

It was subsequently ascertained that the patient had died at Acton on May 1, 1888, from bursting of the aneurysm internally, and that no post-mortem examination was made, hence it is impossible to make certain of the diagnosis.

In 1879 Mr. Barwell had the opportunity of following my suggestion of applying simultaneous ligatures to the carotid and subclavian arteries in a case of aortic aneurysm diagnosed as such, and his patient survived fifteen months. In 1880 his example was followed by Lediard, whose patient survived for eight and a half months, and by Wyeth, whose patient lived a year. It should be noted that

in all three cases Mr. Barwell's ox-aorta ligature was employed.

Returning now to Dr. Cockle's proposal to tie the left carotid in cases of aneurysm of the arch of the aorta, I first performed that operation in 1872, and the patient was greatly relieved, and lived over four and a half years.* Mr. Holmes and Mr. Barwell had each a successful case of the kind, but Mr. Holmes's proved, after twelve years, to have been a case of malformation of the heart.† In 1874 I again performed the operation on a man, aged forty-four, who had undergone a variety of treatment, including iodide of potassium, venesection, and compression of the left carotid before he came under my care for supposed aneurysm of the aorta, which was making progress. The right radial pulse was not to be felt, and the arm had been swollen. I tied the left carotid with catgut on January 21, but the patient died two hours afterwards from failure of the respiration. At the post-mortem examination a large innominate aneurysm was found, and the right subclavian artery was impervious up to the sac, death having resulted from want of blood supply to the brain.

In October 1878, I tied the left carotid for

* *Clin. Soc. Trans.*, vols. v. vi. x.

† *Ibid.* 1888.

the third time in a man, aged forty-four, with an aneurysm of the arch, ehloroform being given for the skin ineision only, and even then produeing great eyanosis. Immediately on the ligature being tied the patient became pale, his heart weakened, and he became profoundly uneonseious, the left pupil being widely dilated. After bleeding to $f\bar{3}x$ and the administration of brandy and beef-tea by œsophagus tube and enemata, the patient recovered consciousness, but never properly rallied, and died twenty hours after the operation. The post-mortem examination showed an aneurysm of the size of an orange from the junction of the ascending and transverse portions of the areh, both of which were considerably dilated and pressed on the trachea.

In 1885 I tied the left earotid for the fourth time in a man of forty-three, who had notieed a pulsating tumour of the episternal noteh and left side of the chest for nine months, which was increasing in size. Cocaine was the anæsthetic used, 15 minims of a 20 per eent. solution being injected in the line of incision fifteen minutes before the operation. The artery was tied with earbolised silk. In the evening he was found to be aphasic, and the following morning there were faeial paralysis and palsy of the right arm. The wound

healed and the aneurysm became more solid, and did not pulsate so forcibly as before the operation.

The power of speech gradually improved, and on the fifty-eighth day was reported good, though there was a tendency to reduplicate the first syllables of some words ; the aneurysm remained *in statu quo*. He was transferred to the medical wards on the sixtieth day, and remained there two months, and was then discharged at his own request in much the same condition. I have ascertained that this patient died at Birkenhead in June 1886, the certified cause of death being "thoracic aneurysm."

Dr. Elwin Harris has recorded in the *Clinical Soc. Trans.* 1891, a case of aortic aneurysm occurring under his care in the St. George's-in-the-East Infirmary, in which I tied the left carotid under cocaine in March 1890. The patient lived two months, and at the post-mortem examination the aneurysm was found to be filled with clot, mostly laminated.

In November 1890, I had a sixth case, thanks to the kindness of my friend, Dr. Robinson, of the Mile End Infirmary. The patient was a woman, aged sixty-one, who had had symptoms of aneurysm of the aorta for three years, for which she had been treated in the London Hospital. In July 1890, when

admitted to the infirmary, there was marked pulsation in the suprasternal notch, with a *bruit*. She was unable to lie down, and suffered from an irritating cough. After four months' treatment by rest and iodide of potassium without improvement, the operation was performed without an anæsthetic. Three days after it was noted that respiration, which had been distinctly noisy, was quite quiet. Six days after the operation she was able to sleep for seven hours.

In January 1891, she complained of a return of pain in the right shoulder. In February, the tumour pulsating above the sternum was found to have undergone diminution, and all her symptoms becoming ameliorated she took her discharge on August 8, 1891.

On September 3 she was admitted into the London Hospital with a pulsating tumour at the inner end of the right clavicle, which could be felt just above it. About the middle of November she began to complain of great pain shooting through the sternum and between the shoulders, and died suddenly on November 29, more than a year after my operation.

The post-mortem examination showed the first part of the arch to be uniformly dilated. From the right superior aspect of the transverse arch (between the innominate and left

carotid) was a large aneurysmal sac of the size of an orange, with an opening into the aorta of the size of half a crown. The sac was adherent to the trachea, and almost completely filled with laminated clot.

For the following abstract of a seventh case of aneurysm of the arch in which I tied the left carotid, and which was under the care of Dr. Roberts, I am indebted to Mr. Bueknall, late Surgical Registrar of University College Hospital.

CASE 7.—James Smith, aged thirty-six, a labourer, was admitted November 4, 1898, complaining of "pain in the chest." From boyhood till the age of twenty-six he served as a hand on a fishing smack. Since then he has worked as a rough labourer, doing heavy lifting. For seventeen years he has served his time in the Militia Artillery, "lifting guns." Was in bed with rheumatism for seventeen weeks at the age of twenty-two. Had some swellings in the groins once, but *no syphilis*. Often drunk, and smoked half an ounce of shag daily.

Family history.—Father died of consumption, aged twenty-eight.

Present illness.—Began in April 1898, with pain behind the sternum, which came on when he ceased working, and lasted till he settled to work again, and "warmed to his work."

In September the pain became worse, and

spread over the right upper chest to the scapula, and ran down the right arm as far as the internal condyle. He had to give up work and go to bed for four days.

The pain continued to get worse, and was least felt whilst doing manual labour.

During October 1898, he had a cough.

State on admission. November 5.—Patient presented all the signs of an aneurysm projecting forwards in the first and second right intercostal spaces. The first and second right spaces were bulged, and dull on percussion for a distance of one inch from the sternal margin, and pulsation of an expansile character could be seen and felt here, and in the episternal notch and right supra-clavicular fossa.

The inner ends of both clavicles were projected forwards by the swelling, especially the right, and each beat of the pulse threw them further forward, and caused a heaving of the upper part of the chest.

Some dilated veins lay over the front of the chest, and the jugulars were also distended.

Patient had a frequent brassy cough, and the voice was harsh; but the laryngoscope showed that both cords moved equally. There was marked "*tracheal tugging*," the right pupil was larger than the left (slightly), and the right radial pulse might have been a shade earlier than the left; it was certainly much larger in

volume. The pulse was regular, 68 to the minute, high tension, large, collapsing rapidly during diastole in a manner typical of aortic regurgitation. Heart apex-beat heaving in the fifth space, in the nipple line.

On auscultation a blowing systolic murmur could be heard over the aneurysm; the second sound could be clearly heard in the second right interspace, and along the left border of the sternum a murmur could be heard following the second sound, and running through the whole period of diastole. A blowing systolic murmur could be heard at the apex. The lungs were examined, and found healthy.

Notes before operation.—During November and December 1898, and the first half of January 1899, patient had severe attacks of pain in the shoulders, back, and side of the neck, and face. The aneurysm at first became smaller, but during January it increased in size, and definite swelling and pulsation appeared beneath the pectoral just below the right clavicle. During this period patient's temperature remained normal. On January 18 patient was transferred for operation.

Operation (January 18, 1899, by Mr. Heath).—The left common carotid was ligatured with carbolised silk opposite the cricoid, Eucaine β being used as a local anæsthetic. There were no succeeding nervous symptoms.

On January 19 and 20 the patient slept badly, owing to pain in the region of aneurysm. On the 20th the pulsation in the aneurysm was distinctly less marked, and daily improvement was noted until February 1, when he returned to the medical ward with the operation wound healed. The pulsation was now much less distinct and forcible, and patient was free from pain and had slept well since January 20. His cough was less frequent, and less brassy in character.

On February 16 patient complained of pain in the chest and cough, and on listening to the chest râles and rhonchi could be heard scattered over both lungs.

On February 17 his temperature shot up to 103° and from this date till the day of his death (March 21) he had a constant remittent fever varying between 100° and 104° , usually about 102° , with daily remissions of two or three degrees. The lungs showed all the signs of rapid and widespread tubercular infiltration and consolidation, and later cavity formation at the apices was evident.

The patient grew thinner and weaker daily, and expectorated copious purulent sputa containing tubercle bacilli. He sank and died on March 21, having been ill a little over a month. The aneurysm gave rise to no symptoms during this time, and was daily less evident.

There were two aneurysmal sacs, a large one springing from the ascending aorta, and a smaller one arising from the back of the innominate artery. Both contained laminated clot. The aortic aneurysm formed a tumour as large as a clenched male fist, lying to the right of the extra-pericardial ascending aorta, and communicating with its lumen by an orifice the size of a florin. This pierced the antero-external wall of the vessel about midway between the pericardium and the origin of the innominate. The fibrous tissue forming the wall of the aneurysm extended around the vena cava and the origin of the innominate, and to the jugular vein. The manubrium sterni and ribs are adherent to the sac.

On opening the aneurysmal sac it was found to be filled with clot, the central part soft and rather fluid, the main mass distinctly laminated. The most peripheral portion was decolorised.

The innominate aneurysm formed a tumour as large as a hen's egg, arising from the artery a quarter of an inch from its bifurcation. It lay behind and to the left of the larger aneurysm, to which it adhered, being in close contact with, and adherent to, the trachea on the inner side. It contained laminated clot, and communicated with the larger sac by its lower end.

The left carotid was obliterated an inch below

the bifurcation, and converted into a fibrous cord half an inch long. Below that there was solid clot, filling the vessel to within half an inch of the aorta, close to the larger sac. The aorta was extensively diseased. The lungs were universally adherent and solid with tubercles, which had broken down beneath the apex of both upper lobes, leaving a ragged cavity the size of a small hen's egg in each (University College Museum, 1234).

That the application of a ligature to the left carotid has an effect upon an aneurysm of the transverse portion of the arch of the aorta is, I think, sufficiently shown by the above cases. In case six it is noted that on the third day after the operation the respiration, which had been distinctly noisy, had become quiet, and the patient was able to recline against her pillows. On the sixth day she was able to sleep for seven hours consecutively. In the seventh case, on the third day the pulsation of the aneurysm was distinctly less marked. But the relief in my first case (Dr. Coekle's patient) was even more marked, for I brought him before the Clinical Society more than a year after the operation, when it was recorded that "the patient is in perfect health, and feels no inconvenience from his chest. He sleeps well and can lie on either side equally well. The right chest wall in front is quite

restored to its natural shape, or if anything is a little flatter now than its fellow. On palpation, the heaving impulse formerly existing over the right anterior chest wall is almost entirely gone. On percussion, the right anterior chest wall, formerly so dull, has, to a considerable extent, recovered its normal condition" (*Clin. Soc. Trans.* vol. vi. 1873).

Various theories have been advanced to account for the formation of laminated clot in these cases. The simplest was that it depended upon the enforced rest in bed following the operation; but the fact is, that in every case the effect of prolonged rest in bed had been tried for many weeks without the slightest benefit. Next, it was suggested that the clot, beginning at the point of ligature, spread down into the aneurysm, and thus led to the formation of a coagulum in the sac. This is contrary to fact, as shown in the several preparations, for in no single case was the left carotid involved in the sac, and it is noted that the small thread-like clot, which, in some instances, spread down the carotid, in one case only extended into the aorta, and joined that in the aneurysm. I maintain the view which I have always held about these cases, viz., that the distal ligature affects the current of blood in the aneurysm, probably by retarding it, and thus causes it to flow around the sac

instead of directly through or past it, and in this way leads to the deposit of laminated fibrin on the probably roughened wall of the sac.

When this normal cure of the aneurysm has gone on for some time, there is no doubt a tendency for the small remaining cavity to become blocked with soft coagulum, and this is probably a critical moment for the patient, and may account for the sudden deaths which have occurred at considerable periods after the operation. An aneurysm which is semi- or completely solid must necessarily exercise much greater pressure on its surroundings than one which only contains fluid blood, whilst the sudden arrest of a stream of blood, through a sac so near the heart, would be likely to interfere with its action and lead to syncope.

It will thus be seen that of seven cases in which I have tied the left carotid, as suggested by Dr. Cockle, the first was by far the most successful. In the second case the diagnosis was incorrect, the aneurysm proving to be innominate, and the proper vessel to have tied would have been the right carotid. In the third case the embarrassment of breathing caused by the anæsthetic was so great that I abandoned its use in my subsequent operations, and strongly advise the employment of

cocaine in all future operations on the large vessels of the neck. The results, taken as a whole, are perhaps not very encouraging, but it must be borne in mind that in dealing with a practically incurable disease, a prolongation of life for even a few months may be worth attempting.

ON
CASES OF THYROID CYST

GENTLEMEN,—Ten days ago you saw me operate on the young woman whose neck we have just dressed in the ward. She is twenty-five years of age, and presented a tumour of the thyroid gland on the left side, giving the characteristic appearance shown in the photograph (Fig. 16). There could be no doubt as to its being a tumour of the thyroid, for it distinctly rose and fell with each act of deglutition, but there was a question as to whether it was solid or cystic, and my own impression, which turned out to be erroneous, was that it was a solid or adenomatous tumour. I made a free incision along the line of the sterno-mastoid, and dissected rapidly down to the tumour, intending to enucleate it with my finger if possible, and I then found that I had to deal with a very tense cyst, and not a solid growth. This made the operation all the easier, for after carrying my finger freely round the tumour, I tapped the cyst and was then able to withdraw it with

very little difficulty. Three ligatures were applied to bleeding vessels, and the wound was then closed with sutures and dressed aseptically, and is now practically healed.

Let me remind you that the interior of the

FIG. 16



Cystic Adenoma of Thyroid.

cyst, though occurring in a young patient, presented several small calcareous masses, and none of the glandular structure which was so marked in the case of the woman, aged fifty-six, upon whom I operated last February, and who had a cyst of the right side of the thyroid (Fig. 17).

In her case I made a much smaller

incision, and, having emptied the cyst, I enucleated it without any difficulty, and then filled the cavity with strips of iodoform gauze to stop the bleeding. She made a good recovery and went home, but was readmitted in April, when Mr. Horsley was in charge of my wards, with a solid tumour in the position of the

former cyst. This was removed, and the patient unfortunately died, when the post-mortem showed a remarkable condition of dissemination of growths, resembling the normal thyroid in structure, in the lungs, on the ribs, and in other parts. This is a condition of things which has been met with in several instances of thyroid tumour, and is a remarkable example of the invasion of other organs by a growth which, microscopically, as you can see in the preparation before you, in every way resembles a normal structure.

FIG. 17



Cystic Adenoma of Thyroid,
growth in interior of cyst.

The treatment of thyroid cysts has of late years undergone great improvement by the introduction of the method of enucleation, for which we are indebted to Mr. Charters Symonds (*Clinical Soc. Trans.* xxiii.). In former years surgeons used to treat their cases very unsatisfactorily by injection with preparations

of iodine, which seldom produced a cure, and it was the late Sir Morell Mackenzie who introduced a much more satisfactory method by employing injections of iron. He used a watery solution of perchloride of iron (25 per

FIG. 18



Thyroid Cyst.

cent.), and the cyst having been punctured and emptied, a drachm or two of the solution was injected through a canula, which was fastened in with plaster and then plugged, so as to retain the solution for seventy-two hours. The effect of the iron was to arrest all hæmorrhage, and to set up suppuration in the cyst, and the canula was retained to

give exit to discharges while the cyst was contracting. I show you here two photographs (Figs. 18 and 19) of a young woman whom I treated by this method many years ago very satisfactorily, but the cure is of course much more tedious than by enucleation.

Let me warn you against using iron injections in the case of solid growths of the thyroid. I remember seeing this done once by a colleague with most disastrous results, the patient dying rapidly of thrombosis due to the coagulation of blood in the veins of the thyroid, and the passage of clots into the general circulation. The only safe injection of solid growths is one which I have often employed in suitable cases, viz., 20 to 30 drops of an alcoholic solution of iodine (1-12). This fluid should be injected with a hypodermic syringe into the glandular structure, avoiding all superficial veins, and may be repeated every third day. This is a much more effectual method than the external application of iodine in the form either of paint or ointment in cases of large goître; but in slight cases, such as are not infre-

FIG. 19



Thyroid Cyst.

quently met with in young women soon after puberty, I have been very well satisfied with the daily use of the *Linimentum Potassii Iodidi e. Sapone*, which has the great advantage of causing no damage to the skin or clothes of the patient.

In cases of solid glandular tumour of the thyroid, enucleation is as satisfactory as in the case of cysts, and the extensive operations formerly undertaken for the removal of one or both halves of the gland are seldom called for. In the cases in which the thyroid exerts undue pressure upon the trachea, the division of the isthmus after the application of two ligatures, as originally proposed by Gibb, has proved very effectual in the hands of Sydney Jones and others. The most urgent and difficult cases are the somewhat rare examples of fibroid goitre in which the trachea is compressed laterally and flattened, so that the operation of tracheotomy, when called for in a sudden attack of dyspnoea, is most difficult of performance. I was greatly impressed by this, when a student, in the case of a woman who, admitted for dyspnoea, was foolishly allowed to walk upstairs to her ward. Here she fell down apparently dead, and the house-surgeon, hastily summoned, attempted to perform tracheotomy, but only inserted the tube into the cellular tissue of the neck, and produced subcutaneous emphysema

of the head and neck by his efforts to inflate the lungs: The post-mortem showed the trachea to have been completely flattened laterally by the fibroid goître.

ON
DISEASES OF THE JOINTS *

TO-NIGHT I have to speak to you upon diseases of the joints. It is not easy to draw the line between those cases which belong to the physician and those which belong to the surgeon; but of course my attention will to-night be principally given to the diseases which, by common consent, are considered to be surgical. Necessarily there must arise, in connection with the treatment of such important matters as diseases of the joints, many questions which are common ground for the physician and also for the surgeon.

In the first place, with regard to acute synovitis. Acute synovitis is common enough in the physician's practice as the result of acute rheumatic fever. In the surgeon's practice it is more frequently the result of some injury, either a wrench of the joint, or it may

* One of the Lane Course of Medical Lectures, delivered at Cooper Medical College, San Francisco, September 23, 1897.

be a puncture of the joint, which has led to acute synovitis.

Perhaps it will be convenient to deal with cases of puncture of the joint first, because one or two points of interest arise early in the case, and one has generally the opportunity, in a case of punctured joint, of seeing it from the first.

Let us suppose then, for a moment, that a patient drops his pen-knife on his knee and punctures his knee-joint. What are the evidences? In the first place there would be a little bleeding, but very little, and then there would be an escape of synovial fluid from the interior of the joint, and nothing can be more easy to recognise than that, because it is exactly like the white of a fresh egg, and any one with the least power of observation would note the flow. There is just one fallacy which I think it well to mention in connection with it, viz., that it is possible that a puncture of the bursa in front of the patella may give rise to a fluid very, but not precisely, like that from the interior of the joint. But in the first place the position of the puncture would pretty well point out that it was the bursa, and if any doubt arose about it, the surgeon would be wise to thoroughly cleanse a probe, and dip it into a little carbolic solution to render it quite aseptic, and then introduce the

probe for a moment into the cavity; and he would at once ascertain whether it was a limited cavity, that of the bursa, or a large cavity, that of the joint.

Supposing that it was the joint, there would be no question as to what the treatment should be. The puncture should be closed as soon as possible, and I myself advise that in anything except a very small puncture, there should be a stitch put into the skin to draw the parts firmly together, and then that collodion should be painted on. I look upon it as most important that the wound should be closed as soon as possible, but there, of course, comes the question whether it is desirable to take antiseptic precautions. So much must depend upon the nature of the case. If the individual were a fairly clean individual; if his clothes were fairly clean; if the knife were a clean one, and there were a simple puncture through which synovial fluid escaped, for my own part I think I should trust to the probability that the knife was thoroughly cleansed by passing through the clothes, and that no matter of a deleterious character had been carried into the interior of the joint. But, of course, circumstances would be very different if, as happened once in the dissecting room at University College, a student who was dissecting dropped a scalpel, which he was using on

the dead body, upon his knee and punctured the knee-joint. In such a case as that, or in the case of a person with exceedingly dirty clothes, where the knife might have taken some dirt from the clothes into the joint, then I should be inclined to wash the wound thoroughly, syringe it (possibly enlarging it if it were very small, so as to be able to get the syringe in), and to wash the joint out once with a very dilute solution of carbolic acid. But when this is done the wound ought to be closed.

To keep down synovitis, because that is really the great object, I have the greatest faith in cold. I believe if you will put on ice from the very beginning in a case of that kind, you will prevent the occurrence of synovitis; but the iceing must be thoroughly done, and that is just one of those things which it is a little difficult to manage. I mean it must not be simply cold applied for an hour, and then the dressing allowed to get hot, because if you do that you will bring about an amount of reaction which will be very great, and you will not only undo all the good you ought to have done, but you will actually inflict a good deal of injury.

When I say ice should be applied, I mean a continuous iceing should be applied for twenty-four hours at least, because then we

may hope that the danger of inflammation is passed.

But supposing that we do not see the case so early, or at all events, that synovitis occurs: there would be all the local symptoms of inflammation—pain and heat—and the swelling, which is due, of course, to the effusion of synovial fluid. Now I take it that we are more familiar, most of us, with the distension of a joint in the chronic condition; but it makes no difference, of course, whether it is acute or chronic, there is the distended knee-joint, the patella floats and you can press it back, and rap it against the condyles, if you like, and if the tension of the joint is not too great. If the tension is very great you may not be able to do that, but there are the synovial pouches well distended with fluid. I feel sure that this distension is one of the great elements in sending a patient's temperature up. The temperature will range from 102° to 104° F., and the patient will be very ill. I think that experiments have shown quite conclusively that the mere presence of fluid producing tension is alone sufficient to raise the temperature, and therefore obviously the indication is to reduce that tension as soon as possible.

Now there is no method better and no method simpler, or more safe, than to aspirate

the joint. I have frequently aspirated knee-joints without the slightest trouble afterwards, and I am quite sure that, with a fine needle, carefully disinfected, and with the skin disinfected too, you will have as little danger as is possible in drawing off fluid from the knee-joint.

As to which side of the knee should be aspirated, I do not think very much matters. Theoretically it is said that it is better to enter on the inner than the outer side. I do not think it makes the slightest difference, so long as the joint is punctured carefully and the fluid drawn off; and then, after the operation, absolute rest is secured for the patient. The limb should be put upon a splint. There should not be the slightest movement allowed, and for my own part, I then paint the joint all over with belladonna and glycerine. I mean equal parts of extract of belladonna and glycerine, which, I find, is one of those things that greatly tends to prevent inflammation, to relieve pain, to constrict the vessels of the part; and, in fact, I think mainly by my action, the application of belladonna has become now in English surgery the common application for all cases of local inflammation.

Another thing that I would venture to lay a little stress upon, though here perhaps I

may trench upon the physieian; and that is, that I am old enough to believe in what the old physieians called the *primæ viæ*. I mean that we have a long intestinal canal which is very apt to be overloaded. The physieian of the present day, I am afraid, does not very much believe in the *primæ viæ*. He believes more in neuroses, and he gives everybody bromides and things of that kind. But I like to begin the treatment of a surgical case with a good purging, and I am quite sure I am right. You may take it that, if you have got to operate upon a patient, unless you have him under your care for a few hours beforehand, and get his bowels to act freely, you will have trouble immediately after the operation. He will have fever, he will be sleepless, he will be altogether uncomfortable. But if you take such a patient, and give him a good pill over night, and follow it up with a black draught or anything you like in the morning before you operate, and get his bowels fully relieved, then that patient simply has an uneventful convalescence.

There is one form of synovitis which is distinctly surgical, and which is often overlooked, I am quite sure. Whenever I find a young man with inflammation of a single joint, I always inquire as to the existence of gonorrhœa, and I generally find it. I think it

is a point to be impressed upon every surgeon that a monarthrosis—that is to say, an inflammation of a single joint—in an otherwise healthy young or middle-aged patient, is generally connected with gonorrhœa or leueorrhœa. For I am quite sure that in many cases it is leueorrhœa in the female, and not necessarily gonorrhœa; but in the male it is always gonorrhœa, and a little investigation will show that the patient has recently suffered, or is actually suffering, from that disease.

Now I must just say one word with regard to what is unfortunately called “gonorrhœal rheumatism.” It is an arthritis, and it is due to the gonorrhœa, and I believe myself that it is a very mild form of pyæmia. It is said by some persons that it is an affection of the nerves. Jonathan Hutehinson, who is a great authority on many subjects, but with whom I venture to differ on this matter, holds that it is some obscure affection of the nervous system; but I say that it is a very mild form of pyæmia, the result of the gonorrhœa. And I think the proof that it is so is the fact that I cure my cases rapidly by giving them large doses of quinine. Of course you may say, “Well, that would do equally well for a nervous complaint.” So it might, but it certainly is a fact that if you give these cases of gonorrhœal rheumatism, so-called, 5-grain doses of quinine

every six hours, and at the same time if you cover up the joint with belladonna—a fomentation outside is a convenient way of doing it—and let the patient lie quiet in bed, these cases get well very rapidly and without any subsequent trouble. I may say that gonorrhœal rheumatism is held by some people to be a very troublesome and difficult thing to treat, and very likely to leave behind it ankylosis of a spurious nature—false ankylosis of the joint. I do not find that to be the fact. I find that with 5-grain doses of quinine I can cure these cases rapidly, and that within a week or two they are able to go out with a perfectly healthy joint. Of course, one puts on a bandage afterwards, to support the joint; but I mean that these patients are not confined for weeks, as they used to be, in splints, and they certainly do not lose the use of their joints.

I have so far sketched a case of synovitis which has got well. But all cases of synovitis do not get well—I mean they may go on to suppuration. If the inflammation is exceedingly acute, or if the patient's health is broken down somewhat by previous excesses, it is quite possible that suppuration may take place. Of course, if there is some septic matter in the joint, then it is almost certain that the joint will suppurate.

I do not know that there is anything more

difficult than to be quite sure, positively certain, that a joint has suppurated. You see a joint full of fluid; you find considerable tension; you have a sharp rise of temperature, and you will claim, in all probability, that the joint has suppurated, and I should say so, too; but I should be very loth to cut into that joint without first aspirating it. It seems to me wrong to run the possible risk of such a serious mistake as cutting into a joint which has not suppurated, when it is easy to ascertain what the condition is by means of the aspirator.

Another reason why you may advantageously aspirate the joint is that I am quite sure there are cases where suppuration is only just beginning, where the fluid is not actually purulent, but where it is synovial fluid loaded with white corpuscles, that will in the course of a very few hours become purulent. I feel quite sure, from cases I have had, that you can cut that inflammation short by washing the joint out with a 1:40 solution of carbolic acid. I have had several cases of that kind where the joint was just, as it were, on the eve of suppuration, and where I have washed out the joint with a carbolic solution, kept up rigid fixation upon a splint, and the patient has recovered without actual suppuration taking place. But if suppuration has really taken place, then I am afraid that there is nothing for it except a free incision,

and probably, as a consequence of that, the patient will lose the use of his joint.

But we have suppuration of the joint occurring in another way, which it is well to bear in mind. I remember particularly a woman who was brought into my wards with this sort of history. She had been confined some two or three weeks before, and had been very ill, then her joint had become distended, and at last she was sent into the hospital. I found a woman somewhat emaciated, evidently very ill, with a high temperature, and with her knee-joint enormously distended with fluid. Taking the history of the case into consideration, I had no hesitation at all in saying that her joint was full of pus, the result of pyæmia. Accordingly, I put her under chloroform, made a free incision, and let out a very large quantity, I forget at this moment exactly the amount, but a good many ounces of pus from the interior of the joint.

Now those, of course, are very serious cases, because the local mischief is an indication of the general condition, and most likely in these patients there are internal complications as in this poor woman, who had also an abscess of the liver which killed her. As regards the joint alone, she would have got well. I took good care to keep the wound aseptic, and she was making very good progress, but the abscess

in the liver enlarged and developed, and she eventually died from that.

So much, then, for what we may consider, I think, as the acute diseases of the joints. What I say with regard to the knee of course applies to other joints, only that I take the knee because it is a large joint, and is a convenient one as an illustration. But you must bear in mind that in all the joints the changes are very much the same, and that they are modified, as regards their external symptoms, by the anatomy of the part. For instance, in the elbow, where the bones fit so exceedingly closely together, you cannot expect, of course, the movement that you have in the case of the patella. So with the other joints, each has its distinct characteristics, which I am not going into to-night.

Now, passing to chronic disease of the joint, I dare say you all know that in England, at least, we have a great deal of tubercle. It is rather the fashion of the present day to put down every chronic affection to tubercle, and I believe this is erroneous. I am quite sure that there are many chronic conditions which are in no way connected with tubercle, but it is a fashion of the day to consider that everything is tubercular; and there is another fashion, that we are not allowed to call things "tubercular," as they used to be, but we call

them "tuberculous." I do not know why, and I do not see the advantage of it. I was very glad the other day, in conversing with one of your physicians here, to find that he spoke of tubercular matter, and so on, and I said, "Why, I am very pleased to hear you use the old terms, which we are told in England are quite erroneous." We will call it, if you please, tubercular or tuberculous, just as you like.

The history is this: We have badly nourished children, generally brought up under very disadvantageous circumstances, who come, perhaps, of tubercular parents, and whose tendency, owing to bad feeding and the bad hygienic conditions under which they are brought up, no doubt is downward rather than upward. I am quite willing to say that no doubt in many of these cases there may be scattered tubercles in the lung, or even on the peritoneum. In these patients we find that they get a chronic thickening and enlargement of a joint, and again, if you please, as it is the most common, we will take the knee-joint as an example. These children do not have much pain. They get about, but there is the swollen joint, and, perhaps, if the mother is a little attentive, she brings the child to you in the early condition. You are then able to make out that there is a swelling of the joint; that

there is no fluid in the joint, but that it is distinctly swollen, and, with a little care, you can make out that this is due to a thickening, apparently, of the synovial membrane. We know, by examination of numerous specimens, that there is a deposit beneath the synovial membrane in the connective tissue between it and the surface of the bone; that there we have a deposit which thickens the parts and of course necessarily limits the cavity of the joint, interfering, therefore, with its movements, and giving the characteristic roundness to the joint which we know is common enough in these chronic cases.

These cases come to the hospital, and the question is, What is best to be done for them? If we could do what would be best, it would be to send them all down to the seaside, no doubt; but that is not possible, and then we have to do the best we can for them, and that is generally to endeavour to fix the joint by means of some light apparatus—not keeping the patient in bed, because that really is very important. The beds of the poor in London are generally in very small rooms, which are only badly ventilated, and it is very much better that a poor child should go out on crutches, if it is only into the little court where the house is, rather than be shut up in the house itself with all the bad air there,

which is not properly changed from day to day. That is one great reason why the apparatus, whatever it is, that the patient has on should be as light as possible to secure fixation, without, at the same time, laying the patient up.

Having fixed the joint in that way, we do all we can to improve the patient's health. We give iron and cod-liver oil, if it is in the winter and the child can absorb the cod-liver oil, and we try to get it better fed by the benevolent ladies and gentlemen of the district, and we do everything we can, particularly, if possible, to get these children down to Margate. Margate is on the coast of Kent, on the eastern border of England. The air there has a remarkably beneficial effect in these affections, and I believe it depends upon this, that there is a great extent of rock in front of the cliffs, on which there is a large amount of seaweed, and when the tide goes down we find that the exposure of the seaweed gives rise to a strong marine smell. I do not know whether it is ozone, for ozone has gone out of fashion, like some other things; but it certainly is very good in those cases, and it is a matter of notoriety that the Sea-bathing Infirmary charity at Margate is really one of the most beneficial for the London poor that we have.

Of course the disease may be arrested by

these methods, and it may subside. For my own part, I do not think you do very much good by any local applications in these cases—in the early stage, I mean. Certainly, blistering, which used to be such a favourite remedy, does rather more harm than good. If anything is done, I content myself with rubbing in iodide of potassium liniment, which I think answers better than anything else. I never paint these joints with tincture of iodine, for I do not believe iodine is of the slightest use unless it blisters, which is an exceedingly painful process; and the mere painting it on with a brush periodically is of no good at all, and it certainly damages the patient's clothes. If you use the iodide liniment of the English pharmacopœia, and I suppose you have something of the kind here, and have the joint assiduously rubbed with it once or twice a day, I think you will do some good, and that is the line of treatment I adopt.

These cases, unfortunately, do not generally remain stationary. They make progress, and they make progress in this way, that the disease, which was at first entirely confined to the synovial membrane, eventually goes a little deeper, and we have symptoms of affection of the bone; not an affection of the cartilage—and it is curious how clinical facts have corrected the wrong pathology of former

years. I remember when I was a student it used to be taught that cartilage, when it was ulcerated, was exceedingly painful. We know, as a matter of fact, that cartilage is a non-sensitive tissue, and may be ulcerated and will not produce the slightest effect at all; but the moment the bone immediately beneath the cartilage becomes affected, if it is merely hyperæmic, we get pain, and that is what happens usually, just about the same time as ulceration of the cartilage. When we get the two surfaces denuded of cartilage, and the two bones coming together, we get that characteristic jumping of the limb at night which used to be said to be a symptom of ulceration of the cartilage, but which is really a symptom of affection of the articular ends of the bones.

The patient is just going off to sleep, and within a minute or two of dropping off to sleep the limb gives a jump, the patient wakes up with a cry, and it is some time before the child goes off to sleep again. The explanation, of course, is that during the waking period the muscles hold the limb, more or less, and fix the joint; but the moment that sleep comes on, and the control of the mind is taken off, then, the effect of the counteracting muscles being lost, those muscles which are acted upon by the same nerves which supply the joint suddenly contract (particularly the strong ham-

string muscles in the case of the knee), and thus the two tender surfaces are forced together and spasmodic action is induced.

In these cases, then, we may take it that the disease has gone beyond the synovial membrane, the cartilages must have been, to a certain extent, involved, and the bones at least hyperæmic. It does not follow that the bone is necessarily carious, and it is only when it is very extensively carious that we get anything like grating of the bones. In these cases modern surgery has been able to do a good deal. Up to the time of the introduction of anæsthetics—I presume you all know that anæsthetics were introduced in 1846—up to that time, and a little later, the only operation which was ever undertaken for a diseased joint was to amputate the limb above it; and in all the older museums of London, and in England generally, and in fact everywhere, you will find beautiful specimens of diseased knee-joints which came from patients whose limbs were amputated as the only method of curing them.

It was only by the efforts of Syme, Liston, and Fergusson—for those were the three men who had most to do with it—that excision or resection of the joints came into practice. I do not remember at this moment whether it was Syme, or whether it was Liston, that did the operation first, but they both did a great

deal to advance such surgery, and Fergusson was the man who followed it up in London, and who forced it upon his colleagues. I can remember as a young student the very strong feeling there was among the older surgeons of the more conservative hospitals against excision. They said that Fergusson killed most of his patients, and there was an element of truth in that, which I will explain presently.

No doubt a good many cases died that ought not to have died, but still the operation made progress, and as the older surgeons fell away from the hospitals and were succeeded by younger men, excision was taken up, and in some cases, I think, carried out to a very great excess. I do not want to mention names, but there are one or two surgeons in London who, at one time, were in the habit of excising—I mean absolutely excising—in children for very slight tubercular disease of the joint. That just shows how the swing of the pendulum goes. But we have improved very materially upon that, for no one would think of excising a joint now when a very much less severe operation could be carried out; and that operation is what is called arthrectomy. By this I mean that nowadays we open a joint which we cannot treat in any other way, and we cut away with scissors the synovial membrane, and we scrape the surface of the bone, if it is

exposed, or the cartilage, if that is bare ; and we remove all the *débris* from the interior of the joint, and thoroughly wash it out, and then close the joint with antiseptic precautions, and we find that we get exceedingly good results.

The drawback to excision in children, of course, was that the bones were so much interfered with, particularly the epiphyses, that the limbs never grew as they should do afterwards, and there are many cases on record of patients, who had joints excised as children, who grew up with little stunted limbs, which were practically of no use to them. That is not the case when arthrectomy is performed. Arthrectomy does not interfere with the growth of the bone, but it attacks and removes the local disease, and if the patient gets over the immediate operation, he recovers with a very useful joint—in some cases with a movable joint ; but that, of course, depends a good deal upon how much disease there was at the time of the operation.

But do not let me be supposed to say that every case of tubercular disease of the joint requires even that operation. I am quite sure of this : that with due care, and with attention to the general health, and with patience—because that is a great element in these cases—we can cure a great many cases which at

first appear somewhat hopeless. The truth that patience has a great deal to do with it is shown by the well-known fact, that there is hardly on record an operation of either excision or arthrectomy among the children of the better classes. That children of the better classes have tubercular disease of the joints there is no doubt; but the explanation is that where the parents can afford to give every possible help to the child, where time is no object, and where money is ample, these cases recover. But with the poor, of course, the best has to be done that can be done, and in many cases an operation is required which, if circumstances were more favourable, would not be necessary.

In hospitals, even among the poor, I believe you can very often relieve the symptoms, particularly that jumping of the limb at night, by other methods less severe than arthrectomy, and before doing arthrectomy I always myself use the actual cautery. I believe that the actual cautery—two or three lines drawn along the side of the joint pretty deeply into the skin—will act like magic in some cases, and the patient recovers very rapidly. It appears, of course, rather a startling thing—“firing” as you would a horse—but after all it is an exceedingly good remedy. You put the patient under chloroform, and the whole pain

has passed away before the child wakes up from the anæsthetic.

I myself believe very strongly in rest; in counter-irritation by the actual cautery, which is much more effectual than mere blistering; in building up the patient's strength in every possible way, and, if possible, getting him away to the seaside. Failing that, then arthrectomy, and of course there will be cases from time to time where excision may be required.

I will just explain why those cases of excision of Fergusson's did so badly. In the first place, King's College Hospital, in those days, was in about as bad a hygienic condition as it is possible to conceive. Imagine what the state of things was. Fergusson came up from Edinburgh in the year 1840, and in order that he might have a hospital, the authorities of King's College bought up an old workhouse standing upon an old burying-ground, and the wards were converted into the best that they could be for the patients. An operating theatre was built, in which all of Fergusson's earlier operations were done; and, in order to get that theatre, some of the bodies in the burying-ground were dug out, and a space was made for it. The lower part of the theatre was positively used as the dead-house, and the theatre where the operations were done was actually employed as a post-mortem room. It

was in direct communication with the main surgical wards, and I have seen, in my younger days, Fergusson doing an operation, and then, as soon as he had finished, the theatre cleared, and a body brought up from below for Dr. Todd or another physician to make a post-mortem examination. Now, can you conceive, in the light of our present knowledge of hospitalism and asepticism, any conditions more likely to lead to deaths from pyæmia?

There was another curious thing—for it is a matter of history—that I will just mention: that Fergusson, in all his earlier operations, allowed the patients to be taken from the theatre without the application of any retentive apparatus; the patient was carried to bed, and in an hour or two afterwards the house-surgeon, at his leisure, put up the limb upon a splint. We know now, of course, that a limb should be fixed from the first, but it was only at the very time that I was his house-surgeon, in the year 1857, that the practice was changed, and from that date the limbs were fixed before they left the theatre, and the improvement in results was rapid.

Leaving that subject, let me say just one word with regard to another question in which tubercle is involved. That is the question of what is to be done when a patient has advanced tubercular mischief in the joint,

and at the same time you find tubercular mischief in one or both of his lungs. There is an emaciated patient, with night sweats, and all the obvious symptoms of phthisis. Is anything to be done, or must the patient be allowed to die? It is a very remarkable fact that these patients who suffer from advanced phthisis, and also advanced tubercular mischief of a joint, rally in the most rapid manner if you will only amputate the limb. It appears that the joint is what is doing the mischief, not so much the lung, and if you will amputate the limb in a healthy part, and get rid of the source of the mischief, it is astonishing how those patients rally. I do not say they get absolutely well, but they recover up to a certain point, and if the disease in the lungs has not gone beyond a remedial stage, they do even recover, and live for some considerable time. I merely mention, from my own experience, that I have no hesitation in recommending an amputation in a case of advanced phthisis, provided, of course, the lung disease is not too far advanced.

Then there is a disease which we have to deal with in those cases where there has been prolonged suppuration, viz., lardaceous disease of the liver, which we find in children, where a joint has suppurated. Where there has been prolonged caries of the articular ends of the

bone, and a discharge of pus going on for weeks or months together, you are apt to find that you have a very large liver, and that you have urine containing a large quantity of albumen; and on post-mortem examination of such a case you will find a large lardaceous liver, and also lardaceous kidneys. In those cases the only possible chance—and it is but a poor one—is to amputate the limb. But again, I have seen most remarkable results sometimes from an amputation done so as to get rid of the source of the mischief, and then sending the patient down to the seaside. They sometimes make almost miraculous recoveries.

Of late years attention has been called to the fact that there is a disease of the joints which is probably syphilitic. I do not know why the joints should be the only part which would escape the effects of syphilitic poison. We know how the bones are affected with syphilis. It is not at all surprising that the joints should be affected, too, but it is a fact that attention has only of late been called to it, and there have not been very many cases reported of the disease. I have here a plate which illustrates, rather well, some cases recorded by Mr. Bowlby, of St. Bartholomew's Hospital, and I will pass it around. You may see that there have been gummatous deposits, or what appear to be gummatous deposits,

on the surface of the bone, and also on the articular surfaces, and there has been considerable destruction of the articulation in both those instances, and the history, I think, was pretty conclusive that it was syphilitic disease. I mention it because at present we do not know very much about it, but I think that one should always be on the look-out for it; that, given a patient who has disease of a joint, with a distinct history of tertiary syphilis, you will be quite right in putting the patient under the influence of iodide of potassium, and seeing what the effect will be. I imagine that, as time goes on, we shall find that there are a good many cases which are put down as rheumatic, or under some such name as that, which really are syphilitic cases, and which can be practically cured by the ordinary anti-syphilitic remedies.

I am going to trench for one moment on the ground of the physician again, merely to mention that of course in gout we have gouty affections of the joints. We have a deposit of urate of soda upon the surface of the articular cartilage, giving rise to that curious white deposit which you can see in Garrod's book, or in preparations, I have no doubt, in your museum. We British people, or rather we English people, for it does not apply to Scotland and Ireland, are especially liable to gout, and the

explanation probably is that our forefathers drank a great deal more port-wine than was good for them. You may read the histories of "two-bottle men" and even "three-bottle men," which means that gentlemen sat down early in the evening to drink their two or three bottles of port-wine before they reeled off to bed.

I beg leave to say that that sort of thing does not exist in the present day, but we inherit from our grandfathers, no doubt, in many cases that gouty tendeney, and we see it in patients with little gouty nodules on the margin of the pinna, and so on. But among the lower classes it is not port-wine, for they do not get it; it is beer that brings gout. We are a great beer-drinking nation, and this I suppose is partly due to the climate. I only wish we could get our people to do as you do here, and drink ice-water, or even if they would drink the excellent lager beer that you have it would be very much better. But an ordinary Londoner is not satisfied unless the beer is somewhat heady; I mean, he likes to feel the effect of his beer, and when he has had his beer he wants to know that he has got it on board. It is that strong heady beer, which I am sorry to say is in many cases adulterated with other matters, that is so very bad for our people, and which makes them gouty. I do not think gout is so common as it was, but still there is

a great deal of it about, and it consists essentially in the deposit of urate of soda on the synovial membrane, and particularly on the articular cartilages, of the joints.

Then there is another disease which we see a great deal of in London, and that is rheumatoid arthritis. I mean that you have patients, and generally middle-aged and badly nourished patients, who have more or less thickening of the joints, which sometimes goes on to very great deformity of the fingers and toes. It is, no doubt, a disease of bad nutrition. There is a certain amount of deposit in the cartilages of the articulations, and as the cases go on we find that the joints become more or less creaky—they creak as the patient moves. When you come to make a post-mortem examination of one of these joints you find that the cartilages have undergone very considerable change; that really the cartilages have disappeared, and that the bone which has taken their place is of an ivory consistence, and you find that it is grooved very deeply where the two bones have worked one upon the other. There are generally also osteophytic growths outside the joint, giving the very characteristic appearance, which is very well recognised in England at least, of rheumatoid arthritis.

In the early stage probably that disease may be curable. Some of our waters are thought

to be very beneficial, particularly the Bath waters, which are warm and slightly chalybeate, and the waters of Buxton, where the waters are also slightly chalybeate and saline. The fact is that the well-to-do patients go to Buxton in the summer months—Buxton is high up in Derbyshire, and is a very pleasant place in fine weather—and they go to Bath in the winter months. I have sent from time to time patients down to what is called the Water Hospital at Bath, and certainly they improve there, drinking and also bathing in the water. It certainly seems to do this somewhat obscure and very chronic disease good.

Now, with regard to the joints, there is just one other matter which I should like to mention, and that is the occurrence of loose cartilages or bodies in the interior of a joint. It is a very old thing, John Hunter described it extremely well, and there have been plenty of descriptions of it since. A patient is apparently in good health; has had no injury to his joint at all; but he finds that, while he is walking, he suddenly gets a violent pain in the joint, and very often falls to the ground. The joint is found to be a little swollen afterwards. Perhaps, if he lays up for a day or two, the swelling subsides and he feels all right again, and at a variable period the same thing recurs. And at last he finds, or the surgeon finds for him, that

there really is a little loose body which moves about in the interior of the joint, and which you can find, on careful manipulation, by the side of the patella from time to time; but the moment you touch it it disappears into the interior of the joint, and perhaps you may not find it again for some days. These little bodies are very curious, and it is remarkable that John Hunter, in his paper, acute observer as he was, lays it down that these loose cartilages were the result of organisation of blood-clot. You know John Hunter had rather an exaggerated opinion of the blood, and he had a notion—there was no evidence to prove it but it was a conclusion he came to—that those little bodies must be the result of a small clot which happened to have occurred in the joint, and which became organised.

In the first place, it is impossible that blood clot can organise into cartilage, and in the next place, there is a very much more feasible explanation in the little fringes which you all must have seen in the knee-joint. In certain cases these become very much hypertrophied, and then no doubt one of them becomes more or less developed into a little body containing cartilage, and eventually the pedicle breaks, and it gets loose in the interior of the joint. You may, by opening the joint, find quite a number of these fringes in various stages of

development, and you may see in various books drawings of them. It is not very wonderful, then, that from time to time one of these little bodies gets loose, and then it produces those characteristic symptoms which I have endeavoured to describe. It is not difficult to diagnose, but it is very difficult to catch the body, and you have to get the patient to take an interest in it and to find the body, and then to send for you directly he has got it, and to hold on to it until you can come.

The question is, What is the best thing to be done? In the old days, when there was a very great fear of opening joints, and naturally so, surgeons tried to fix these foreign bodies by blistering over them. I do not think it was effectual. I never saw it of the slightest use, but that was about all that was done. Then it was suggested that it might be well to take the body out, and accordingly surgeons used occasionally to cut into the joint and take the body out. I have seen that done, and I have seen most disastrous results—suppuration of the joint and loss of the limb—as a consequence. Of course, to cut into a joint without any antiseptic precautions is always a risky thing, and in the days when cleanliness in surgery was by no means considered, it was not very wonderful that suppuration occasionally followed.

The result of these operations being so very unsatisfactory, Mr. Syme suggested that it would be better to cut in by an oblique incision, and to slip the foreign body—for it was practically a foreign body—out of the joint, but to leave it beneath the skin. That operation proved to be a very satisfactory one, and it was followed up by Mr. Square, of Plymouth, who had a large number of very successful cases, making a free subcutaneous incision into the joint, slipping the loose cartilage out under the skin, and leaving it there until the joint became quiet, and then either removing it or possibly leaving it altogether.

That was the practice up to the time, twenty years ago, when the Listerian treatment came in, and now we all, of course, cut directly into the joint, and take out the loose cartilage, with strict antiseptic precautions, and with the very best results. It is very much better that it should be done in that way, because it is done so much more quickly and so much more readily; and, moreover, you are quite sure that you get all the bodies out, for very often there are two or three, and it is, of course, no use removing one, you must remove the whole number. It is readily done by making an incision straight into the joint with strict antiseptic precautions, and then emptying out the joint, closing the wound,

and putting on an antiseptic dressing, the limb being kept perfectly quiet, and those cases do remarkably well.

Now, in connection with the same subject, there is another cartilage which becomes loose, which must not be confounded with these loose bodies. I mean the internal semilunar cartilage of the knee-joint. This, from time to time, owing to a violent wrench of the joint, becomes loosened from its attachments to the surface of the tibia, and then this remarkable thing occurs: the patient has had a fall, possibly, and has had a wrench to his joint, with a good deal of pain, and that pain is referred particularly to the inner side of the knee, and when the patient tries to extend his knee, he finds that he cannot. He can put it to a little beyond a right angle, but not much, and he cannot move it any further. Now, what has happened there is, that the semilunar cartilage has slipped, and that it is a little out of its place, and being, as it were, the little washer between the two bones, it prevents them from going into their proper position.

Those are the cases which can be cured by a little judicious violence, and they are the cases which are so successfully treated by what we in England call "bone-setters." I really do not know whether or not bone-

setters exist in America, but in England we have them. We have a class of men, who are very often blacksmiths, and certainly some of them have a knack of putting little sublaxations—for they are not *bonâ fide* dislocations—of putting sublaxations of the joints into place, and of breaking down adhesions, which sometimes the surgeon is afraid to do, and they certainly have a local reputation in many places in England. There was a very well-known man some few years ago in London, named Hutton, who certainly did—there was no pretence about it—make some very remarkable cures. Some of the most remarkable cases of his, and of the bone-setter class generally, were these very cases.

What you want to do is, to flex the patient's knee forcibly, and then, pressing the cartilage into its place, you fully extend the knee. The best plan, I find, is to put the patient on a chair and, standing in front of him, to put his foot between your own knees, and then, gripping well hold of the leg, to forcibly flex the knee suddenly. It is painful for the moment, but then you find that the cartilage has gone into its place. When it is once in its place, I think a blister over the position of it helps to fix it, and I generally, therefore, when the inflammation due to the manipulation has subsided, put on a blister

once or twice just over the position of the inner tuberosity of the tibia, and those cases generally do well. It is well, also, to let them wear a support. They should have some kind of knee-cap, with a little pad made to fit against the cartilage, because where the cartilage has once slipped out it is apt to slip out again, and by a support of this kind it is possible to prevent it.

In cases in which the cartilage is dislocated and fixed, or when the dislocation frequently recurs, an operation for removal of the cartilage by an incision into the joint under strict antiseptic precautions offers the most satisfactory method of treatment.

ON
ANEURYSM*

THE subject I propose to speak on this morning is that of aneurysm. I will define aneurysm shortly as being a pulsating tumour in direct communication with an artery. There are sundry varieties of aneurysm described, and I think that some of the distinctions and differences which are made are really uncalled for.

I will venture to define a true aneurysm as an aneurysm which consists of one or more of the coats of the artery. No one can say positively, during the life of the patient, whether one or more coats of the artery may not be more or less absorbed; but I think it is possible, in the great majority of cases, to say pretty positively whether the coats of the artery still form the sac; and so long as that is the case, I am content to call it a true aneurysm.

A false aneurysm I shall define as one in

* One of the Lane Course of Medical Lectures, delivered at Cooper Medical College, San Francisco, September 24, 1897.

which the coats of the artery have given way, the wall of the sac being formed by the surrounding tissues, more or less indurated and matted together, as they always are, by the changes which take place during the formation of the aneurysm.

Then, also, there is that rarer form which we call the dissecting aneurysm, where the blood forces its way between the coats of the artery, runs for a certain distance along the vessel, and then again forms an opening, and the blood finds its way into the main artery. This is very rare, being generally found only in the aorta.

Aneurysm may be named from the cause, and may be idiopathic or traumatic. Idiopathic aneurysm is by far the most common, and I take it that the great cause of aneurysm is the occurrence of atheroma in the coats of the artery. Atheroma used to be considered as merely a form of fatty degeneration of the tissues, but of late years a good deal of light has been thrown upon the subject, and we know now that atheroma consists essentially in an inflammatory process, the development of a small cell infiltration of the coats of the artery; and that it is only in the later stages that that infiltration undergoes fatty degeneration, with which we are all familiar at post-mortem examinations of old diseased arteries.

In the calcareous change of the artery we have a development of calcareous nodules, or particles, in the muscular fibre of the vessel, and I need hardly say that this muscular fibre is more developed in the smaller than in the large arteries. Hence we have calcareous degeneration commonly in the smaller arteries, but atheroma affects the larger arteries, and especially the aorta. There is hardly an old subject in which we do not find more or less evidence of patches of atheroma in one or more parts of the aorta. In the latter stages there is apt to be a development of bone, or something allied to bone, in the atheromatous artery, quite different from the calcareous degeneration which takes place in the smaller vessels.

Given a diseased artery, it is not very surprising that we should find aneurysm occurring under certain morbid conditions of the body. I think there can be no doubt that syphilis is a very important element, and has a direct bearing upon the formation of aneurysm. In England we find that soldiers are especially liable to aneurysm, and much more so than sailors. Now, I take it that both classes of men are equally liable to syphilis. They are also equally liable to sudden and violent muscular efforts, and I look upon those efforts as being one of the main causes

of the occurrence of aneurysm in a diseased artery.

But why should the soldier be more likely to get aneurysm than the sailor? The explanation, I think, is this: that the dress of the soldier is very much tighter; that he is constricted by his uniform and by the belts and other parts of his dress, which he wears during the time that he is making severe exertion. That applied, of course, more some years ago than it does now, because in all cases the dress of the soldier during his active period is a much more sensible one than it used to be. But in all countries, and for many years, the sailor has generally thrown off his clothes when he is going to fight, and he prefers to fight pretty nearly stripped; and you will see, in the representations of the battles of Nelson and others, that the sailors are really working half naked. Under those circumstances there are no tight clothes to constrict their bodies, and therefore I think it is that they do not suffer from aneurysm to the same extent as soldiers.

We have, we will say, a tumour forming upon an artery, which we recognise by the ordinary symptoms to be an aneurysm. First it is a pulsating tumour. Of course, it must be borne in mind that there are aneurysms which do not pulsate. I mean that they have become solid

and are practically cured, and they are very puzzling cases sometimes to the surgeon, who, for the first time, sees a patient with a tumour, and has a very obscure history as to the previous condition of the ease. I know of cases where amputation has been done for a tumour, and subsequently it has been found, upon dissection, that that tumour was nothing more nor less than a cured aneurysm.

There is pulsation, then, and that pulsation ceases immediately upon pressure over the main artery. I think it is important to lay stress upon that, because it excludes those pulsating tumours of bone which are sometimes exceedingly difficult to diagnose. At the lower end of the femur it is not so very uncommon to get a pulsating sarcoma, which resembles in many respects popliteal aneurysm. But there is this great distinction: In the popliteal aneurysm, the moment you compress the femoral firmly over the pube, the pulsation in the aneurysm ceases, and then, with a very little gentle pressure upon the aneurysm, you can slightly diminish its size. Keeping your hand upon the aneurysm, and letting go the femoral artery, you then get immediately, by the first beat of the heart, a distension of the aneurysm to its full size, and, moreover, you notice that it has what we call a distensible pulsation—that the aneurysm swells out in

your hand, and immediately becomes full-sized and pulsates freely. Now, in a bony tumour that is not the ease. It takes four or five beats of the heart before the pumping of the blood into the tumour brings it up to its full size again. That is so characteristic that it serves, I think, to distinguish those two important classes of eases.

Then, in addition to pulsation, as a rule we have a *bruit*—that is to say, on listening to the aneurysm you will hear a rush of blood into it, which produces that peculiar sound which we call a *bruit*. The occurrence of the *bruit* depends very much upon the size of the aperture, upon the shape of the aneurysm, and upon the direction the blood takes in rushing into the aneurysm. Then there are *bruits*, of course, occasionally to be heard, which are not due to aneurysm. It is possible, with the edge of a stethoscope, so to press upon an artery as to produce something very like a *bruit*. Again, in the region of the heart, in the ease of the large vessels, the aorta and the branches of the thoracic aorta, it is possible that a sound propagated by diseased valves of the heart may be carried on into the artery, and may, in some respects, imitate the *bruit* of an aneurysm. But with care I think that can be made out.

Lastly, I would put the symptoms of pres-

sure, symptoms which apply particularly to aneurysms of the chest, where we have, of course, pressure upon nerves producing pain, and that pain sometimes reflected a good distance away from the aneurysm. Pressure upon the nerves also produces change of function, as we see particularly in aneurysm of the aorta where the laryngeal nerve is affected, and where, possibly, one of the earliest symptoms is some interference with the functions of the larynx. A laryngeal examination will show that on one side of the larynx, the left side usually, the muscles do not act as they should do. Then we have also, of course, pressure symptoms upon the veins, and even upon the œsophagus and trachea. All these are collateral signs which must be taken into account in considering the diagnosis of aneurysm.

Before I go into the question of treatment, let me say a word as to the way in which cure of an aneurysm is brought about. A post-mortem examination shows very often that an aneurysm has undergone a partial or even complete cure. The ancients had a notion that the cure of an aneurysm was produced by an exudation of a plastic material from the inner coat of the artery. They were led to think so because they noticed that, in a cured or semi-cured aneurysm, there was a thick white tissue, more or less laminated, and that,

the outer layer nearest the vessel wall was the more organised. That alone ought to have shown them that it was the oldest part. But the conclusion drawn by all the older surgeons was that it was an effusion of plastic material from the coat of the aneurysm.

I merely mention that Professor Macewen, of Glasgow, who was lecturing here last year and whom you all know, has lately revived this notion, and in certain cases has irritated the inner lining of the aneurysm by introducing a needle, which he has allowed to scrape against it, with a view of producing a plastic material there, and so thickening the coat of the artery. The whole subject is still *sub judice*, and in order that I might do Professor Macewen justice, I wrote to him just before I left England, and asked him whether he was still pursuing the plan, and with what success. He wrote me back an answer which I received since I have been here, to say that he still used it in appropriate cases; but, of course, that is not saying very much. He is the only surgeon, so far as I know, who holds the view that it is possible to produce an effusion of plastic material beneficially on the inner coat of an artery. All other pathologists are agreed that the cure of an aneurysm depends upon the deposit of clot from the blood running through the aneurysm.

Broca, the great French surgeon and pathologist, whose work on Aneurysm is quite a classic, very strongly laid down that there were two forms of clot, namely, active clot, as he called it, by which he meant laminated clot, which is more or less colourless and firm; and again the passive clot, as he termed it, which is the ordinary clot due to coagulation of the contents of the sac, and which, of course, is coloured, and is found, after death, to be black. He maintained very strongly that the cure of the aneurysm depended solely upon the active clot, and that the passive clot was rather a hindrance than otherwise.

Now, another view held about that is, that the passive clot is converted into what is termed the active clot, and I myself have very little doubt about it. Richet, probably, was the author who most strongly insisted upon that. I think the evidence is very strong in its favour, and that really there is no great difference between the two clots except in the matter of time, and that any clot which is deposited upon the coat of the artery, will, in process of time, become colourless and more or less laminated, and will very effectually strengthen the coat of the aneurysm by being piled up, layer upon layer, just at the weakest point. It is as though nature attempted to relieve the weakness of the coat at that side by

plastering it carefully with a series of layers, one upon the other, in order to strengthen the vessel.

We find, on post-mortem examination, every now and then, a thickness of some inches even, and that what must have been a very dangerous condition, liable to interruption at any moment, has been tided over in that way, and the patients have thus lived for many years with a cured aneurysm. Therefore, I think we may take it, whatever the view held about the clot may be, that the physician or surgeon endeavours, as far as he can, to produce clotting in the cavity of the aneurysm, which, though soft at first, will gradually become more firm and laminated, and so cure the patient.

From very early days, attempts have been made to cure aneurysm simply by general treatment, and I believe myself that one very great element in the cure of an aneurysm is absolute rest. You must put your patient to bed, in a horizontal position, and you must keep him there for weeks, or even months, if you are to have anything approaching a cure. The fact of lying down and keeping absolutely at rest of course tends to equalise the circulation, to keep down the action of the heart, and bring the vessels into as quiet a condition as they can possibly be, so as to favour the deposit of clot in the aneurysm.

But, in addition to that, we find that from time to time attempts have been made to modify the condition of the blood, and the most prominent and well-known line of treatment was that adopted many years ago by Valsalva, who, from time to time, bled his patients, with the idea that by bleeding he would increase the plasticity of the blood, although authorities are not quite agreed there, and I myself should not recommend bleeding as a routine treatment of an aneurysm. At the same time, I am quite sure that occasional venesection is of the greatest good to the patient in cases of thoracic aneurysm, where the sufferer can hardly lie down because of the pressure of the blood in the great vessels of the heart. In those cases, a judicious venesection—a few ounces of blood taken away—relieves the breathing very considerably, and enables the patient to lie down, which is, of course, the great point, and I am quite sure that in appropriate cases it is exceedingly good treatment.

With regard to this internal treatment of aneurysm, I may say that in 1864 Mr. Tufnell, of Dublin, a very excellent surgeon, brought under the notice of the profession a more systematic treatment of these cases, particularly by dieting, and this is familiarly known nowadays as the Tufnell treatment. This treat-

ment consists essentially in reducing the liquids given to the patient as much as possible; in reducing the solids to a certain extent, and especially in limiting those solids almost entirely to fibrin-making material. Tuffnell advised that the whole of the solid material given in twenty-four hours should be brought down to something like ten ounces, and that of these about six ounces should be dry flesh meat, well cooked; that the rest should be cracker, not bread; and that the patient should take as little liquid as possible.

It is astonishing how little liquid a patient can do with if he sips it. I mean that it is not really essential that we should take large draughts of fluid, although, of course, they are very pleasant. A patient in that condition can do with remarkably little fluid if he takes it in sips spread over the day. He thus gets rid of his thirst, and the thirst can also be met by giving him some ice to suck; and by those means there is no question that a good deal of effect can be produced upon internal aneurysms, and upon external aneurysms also, where other methods of treatment may also be tried. So much for the medical treatment.

Surgical treatment, of course, applies mainly to aneurysms of the limbs. Of late years, also, we have had to deal with aneurysms of the

thorax, and, as I shall point out to you later on, with some considerable success, by means of what is called the distal ligature.

Probably the earliest operation with regard to aneurysm of the limbs was that commonly known by the name of Antyllus. The sac of the aneurysm was incised, whatever clot was there was turned out, and then the upper and lower ends of the artery were secured by a ligature. I need hardly point out what a serious proceeding that was, particularly in the days when the mode of arresting hæmorrhage by pressure above the aneurysm was not well understood. The result may be anticipated. These patients very generally died of hæmorrhage, either at the time of the operation or a few days afterwards, when the ligatures, which were roughly put upon the artery, came away.

The operation, therefore, fell into a good deal of disrepute; so much so that Pott, the great surgeon of St. Bartholomew's at the end of the last century—the surgeon who first described what we commonly know as Pott's disease, and who also wrote about Pott's fracture of the fibula—says in his works that the treatment of aneurysm is so unsatisfactory that, for his own part, he thinks the only plan is to amputate the thigh in all cases of popliteal aneurysm. This, mind you, was at

the time when Hunter was working at the subject—for Pott was eontemporary with Hunter; and Hunter, when he introduced an improvement into surgery, had to eontend with the great influence of Pott, and also that of other men of eminenee, who were all against his view that it was possible to eure an aneurysm by means of a ligature properly applied.

Now, the Hunterian operation, the operation first performed by Hunter, is elaimed by the Freneh surgeons. You will find that it is often said that Desault tied an artery above the aneurysm; and you will find that Broca, even, in his book on aneurysm, speaks of the operation which we eall the Hunterian as being a Freneh operation, or Anel's. Broca generally speaks of it as Anel's operation, but those who have looked into the history of the matter very fully will agree with Holmes, who showed, in his leetures at the College of Surgeons on aneurysm some years ago, that Desault and Anel both merely tied the ligature elose to the aneurysm, and did not open the sac. So far they were improvers, but that is a very different operation from the one that Hunter proposed.

If you tie the ligature elose to the aneurysm, the probability is that you have a diseased artery to deal with, and that was the point

which arrested Hunter's attention. He distinctly says in his work: "If it is impossible to tie the artery close to the aneurysm, why not go further off and tie it where there is a healthy artery?" and that is exactly what he aimed at, and accordingly he tied the artery in what is commonly known as Hunter's canal—I mean, of course, the fibrous canal occupying the middle third of the thigh. That was where Hunter performed his operation, at the latter end of the last century. Nowadays, every surgeon who ties the femoral, goes a little higher and ties it in what is known as Scarpa's triangle, but that is simply because it is more convenient. The operation is exactly the same as that which Hunter did, although we are more careful nowadays than Hunter was, certainly in his first and second cases, not to include the vein; for it is very remarkable that it is quite clear, both from Hunter's own account, and also from the specimen which is in the College of Surgeons' Museum, in England, that Hunter deliberately tied in the vein with the artery, and yet the patient recovered.

Hunter's first operation was performed in 1775, and he had the opportunity of repeating it three or four times before his death, in 1793. The effect of his operation was felt by others, and gradually it was taken up, and even

those who originally opposed it saw that it really was an improvement and finally adopted it.

I would just mention, that having had the honour this year to give the Hunterian Oration at the Royal College of Surgeons, I had occasion to look up very thoroughly the details of Hunter's surgical life; and although I quite allow that, like Shakespeare, he has been rather idolised, and that his admirers have attributed to him more perhaps than he quite deserves, I think on this question of the ligature of the artery there is no doubt that he deserves all that has been said about him. I mention that, because I was much surprised to read a paper by Dr. Stimson, an eminent surgeon of New York, in which he rather belittled Hunter on this question. Now, whatever his failings may be in other matters—and I pointed out some of his failings in the lecture which I gave—I must say, that, with regard to aneurysm, there can be no question that he deserved the credit he received. We may take it, therefore, that from the beginning of the present century the Hunterian operation was a settled and received procedure.

Let us consider for one moment, before leaving the subject, what is the effect of tying a main artery, say the femoral in a case of popliteal aneurysm? The effect is this: In the first place, absolute stoppage of the circulation.

If the ligature of the main artery does not stop the circulation, there is one of two things: either it is not an aneurysm, or you have tied the wrong artery. There is a case on record, and the preparation is in University College Museum, where Sir Charles Bell cut down upon the femoral artery for popliteal aneurysm and tied it, and did not stop the pulsation. After a consultation with his colleagues at the Middlesex Hospital, for that was where it occurred, he amputated the thigh; and then on dissection found that it was one of those curious examples of a double femoral artery, and that he had happened to tie the one on which the aneurysm did not exist. I don't know of any other example of the same kind, but it is important to bear in mind that such a thing may occur, and, of course, if it did, the surgeon would look for the other artery, and certainly not amputate the limb.

I presume, then, that the main artery in connection with the aneurysm is tied, and the pulsation immediately ceases, and the aneurysm becomes less tense. The temperature of the limb also falls somewhat, and the limb becomes a little paler, and we put the patient to bed, and wrap the limb up in cotton wool and flannel, so as to keep the temperature equable. We watch our patient, and we find, in all

probability, within twenty-four hours, sometimes earlier and sometimes later, that a slight pulsation is to be felt in the aneurysm again. That indicates not failure but cure, because it shows that the collateral circulation is sufficient to bring blood to the aneurysm, in a small quantity it is true, but quite sufficient just to give an impulse. It is that blood which will deposit the clot within the sac and produce the cure, and it is from that blood, running through the aneurysm for the next twenty-four or forty-eight hours, or even for a longer time, that the clot is deposited on the wall of the aneurysm, and eventually fills it up, and then the aneurysm becomes absolutely solid.

After that, in the course of some weeks, shrinking takes place, absorption of the colouring material of the blood and of the clot occurs, and then, finally, we have a mass, partly coat of the artery, partly indurated, colourless clot, and eventually, if the patient lives long enough, the whole mass is converted into fibrous tissue. That, of course, is the most successful result which can take place, but it does not always happen. There are accidents following the ligature, from no fault of the surgeon, which I think I ought to allude to.

In the first place, we may have a persistent pulsation. I mean that the pulsation may return in the sac very quickly, and it may go

on and increase, and in fact a cure not be brought about. That, I find, is rather apt to happen in cases where the pressure treatment, which I have to speak of directly, has been tried for some little time before the application of the ligature; where, therefore, considerable enlargement of the collateral circulation has been brought about. In those cases, I believe the great thing is to have patience, and to use well-adapted pressure to the sac. If you put on a bandage, and keep your patient in bed, I believe in most of those cases a cure will result without any further operative interference.

A much more serious thing is to have an aneurysm give way. I think that is to be accounted for by the fact that the sac has become exceedingly thin before the operation is performed; and then the little external manipulation which the sac undergoes at the time of the operation, owing to the anxiety of the operator, and possibly of the bystanders, to ascertain that the pulsation has actually ceased, sometimes determines the rupture of the artery. I feel so strongly upon that point that when I tie an artery, I never allow anybody to touch the aneurysm except my one assistant, whom I put in charge of it to inform me, as I tie the artery, that the pulsation has absolutely ceased, and I won't let anybody else manipulate or touch the sac, because you never

can tell how thin it may be, and how little may be needed to rupture it.

Now let us consider other methods of treatment beside the ligature applied by the Hunterian method. In 1825 Mr. Wardrop, who was a London surgeon of some eminence, although he never belonged to one of the larger hospitals, published some remarkable cases of distal ligature. I mean cases in which he had applied the ligature for treatment, where he could not get on the proximal side of the aneurysm. For instance, he had a case of innominate aneurysm, in which he tied the carotid, and another in which he tied the third part of the subclavian.

But he was not quite the originator of the method, because many years before, Brasdor is said—for it is rather a doubtful case—to have applied a ligature beyond an aneurysm, and therefore the operation has generally been called Brasdor's operation; and so far as the common carotid is concerned, Wardrop performed Brasdor's operation, because, as you will remember, if you tie the common carotid, there is no branch between the ligature and the aneurysm. But Wardrop did a good deal more than that. He tied the third part of the subclavian in one of his cases, and you will remember that between the ligature and the innominate there would be the

branches coming off from the first and the second parts of the subclavian artery, and intervening between the ligature and the actual seat of the aneurysm. Therefore, I think that, in justice to Wardrop, that operation should be called Wardrop's operation.

It fell to myself, in 1865, to have a case of aneurysm of the innominate artery, or at least what was thought to be of the innominate artery. There I united the two methods. I tied both the carotid and the subclavian at the same time. Let me say that this was by no means the first case in which the two operations had been performed, but up to that date, so far as I know, the operations had been done at successive periods. There is a case of which I have a drawing here—a historical case by Mr. Fearn, in which he produced a cure. You will see that the innominate aneurysm has been cured by tying, first the subclavian, and then the carotid artery, but there was an interval of some months between the two operations.

It seemed to me, on thinking over the case and reading up the literature, and having also the advice, I may say, of Mr. Erichsen, as he then was, who was a great authority upon aneurysm—it seemed to me that in this case of what we presumed to be innominate aneurysm,

it would be very much better to do the two operations at the same time. I therefore, in 1865, applied a ligature first to the subelavian artery, simply taking that first because I thought it was the more difficult operation; and then, having elosed that wound, I immediately applied a ligature to the earotid artery above the omohyoid musele.

That patient reeovered perfectly; and I would just remind you that it was in 1865, long before the days of aseptic surgery, and, therefore, I used an ordinary hemp ligature, and left the ends of the ligatures hanging out, and the wounds suppurated; but everything did perfectly well, and the patient was immensely relieved. I need not go into the symptoms, but the aneurysm shrank, the tumour in the neek materially deereased, and the patient eventually left the hospital.

She was, unfortunately, a woman of very dissipated habits, and I found that she was constantly getting inebriated, but I was determined that, come what might, I would have the preparation some day. Aeordingly, I had a label written and fixed on her elothes, saying that wherever this patient was found by the police, information was to be sent to me at my house; and every now and then there was a knoek at the door, and a polieeman ealled to say that a woman named Julia White had been taken up,

and that they found my label on her, and I went and saw the patient. I took her into the hospital over and over again, and she got into other hospitals, and the surgeons were all kind enough to let me know, and then I found, after a couple of years, that the aneurysm began to grow. There was no wonder at it, considering her habits. The aneurysm began to extend again, and it was evident that, owing to her intemperate habits, the mischief was recurring and that eventually it would break through; but fortunately, at last, I persuaded her to go into an asylum, and there she was well taken care of and nursed to the end, and she died eventually from the aneurysm bursting externally.

Then I managed to secure the whole body, and it was removed to the College of Surgeons and carefully injected before it was dissected; and there is the specimen in the Museum of the College of Surgeons, which shows beautifully the whole condition of things, and shows also that we were wrong in our diagnosis. I had the opinion of a good many leading surgeons, and I think the bulk of them agreed that it was an innominate aneurysm, but it turned out to be an aneurysm of the ascending aorta and not innominate. It was an aortic aneurysm which had been very materially benefited by the double ligature, and which I believe would

have been cured—and probably was cured for a time—but for the unfortunately intemperate habits of the patient.

If you look into the surgical works published subsequent to that date, and particularly in Erichsen's *Surgery*, in the edition after my double ligature it was put down, of course, as a case of innominate aneurysm. After the post-mortem, in the next edition, naturally Erichsen altered the statement, and showed that it was an aortic aneurysm. The consequence has been that I think that case is sometimes overlooked, because when I come to look at the surgical works of the day I find very often that my case is not mentioned; and the explanation is really that it was at first considered innominate, and then turned out to be aortic, and that between the two statements the case has been somewhat misunderstood.

My case, although it turned out to be aortic, had a very marked effect upon the minds of other English surgeons. Several cases of double ligature were undertaken, some of them successful and some not, and I think I ought to mention especially, in connection with that subject, the name of Mr. Barwell, who has probably applied the double ligature more frequently than any other surgeon, both for cases of innominate and also for cases of aortic aneurysm.

In my own practice I did not have another opportunity of applying the double ligature for a good many years. But in the year 1887, ten years ago, I had a patient transferred to my care by one of the physicians of my hospital. He was a man of thirty-three, who had all the symptoms of a well-marked innominate aneurysm, and I need not trouble you with the details. He was first in the medical wards, and the treatment there was adapted to the treatment of aneurysm generally—that is to say, he was kept at rest and on low diet, and so on, but, no improvement taking place, he was transferred to my care.

Having gone thoroughly into the case, I came to the conclusion that it was a very suitable one for the double ligature, and on December 7, 1887, I applied a ligature to the subelavian artery in the third part, and also a ligature to the carotid above the omohyoid. The patient was immediately relieved from his symptoms, and made a complete recovery. He left the hospital at the end of some weeks, and the last note says: "Improvement continued until the patient left the hospital on January 27, 1888. The breathing was much better, and the difficulty of swallowing had nearly disappeared." Unfortunately, I have not been able to trace that patient. He was only thirty-three, and he may possibly be alive now. I took some

trouble to try and hunt him up at the address which he gave when he left the hospital, but was not successful in finding him, but I hope that he is still alive.*

So much for the distal operation with regard to innominate aneurysm. As I have said already, in my own case it turned out that I had, by mistake, treated an aortic aneurysm by a double distal ligature. I have since that treated several cases of aortic aneurysm by the distal ligature, though not on the right side of the neck, but by ligaturing the left carotid; and I did so with the advice and concurrence of Dr. John Coekle, who has paid special attention to this subject, and who had worked up the literature, and found that there were a few cases on record where large aortic aneurysms had undergone cure after obstruction of the left carotid artery. Particularly, there are some cases of the Dutch surgeons; and the results seemed so satisfactory that Dr. Coekle was very anxious that the operation should, if possible, be done on the left carotid in a case of confessedly aortic aneurysm.

In January 1872, a man presented himself with undoubted symptoms of aortic aneurysm, and I have here a photograph of the patient taken at the time. After a thorough examina-

* *Vide* p. 162.

tion of his ease, I tied his left carotid, and I believe I may say that this was the first time the left carotid had been tied deliberately with the view of treating an aortic aneurysm. Nothing could have done better. I used a catgut ligature in that case and the wound healed by first intention. It was dressed aseptically, the man made a rapid recovery, and the symptoms of aneurysm became vastly ameliorated, so much so that it was impossible to prevent the patient, who was a labouring man in the country, from resuming his hard work. He would go to his work, and, unfortunately, as a result of that, the aneurysm began to grow again, and finally he died, in 1875, by bursting of the aneurysm externally. Then I was able to secure a post-mortem examination, and I found that there was no question that I had tied the left carotid, and there was a large clot in the aneurysm; and that the effect of the ligature had been practically to lead to very considerable deposit of fibrin in the sac, which, under more favourable circumstances, would have led to an absolute cure.

The question is, what does the ligature do under those circumstances? It is very difficult to explain. One view is that you simply cut off the current of blood to a certain extent, by stopping its exit from the aneurysm; but that is not really so. The mere fact that you stop

the current beyond the sac does not necessarily prevent the blood getting into it; in fact, it rather tends to make the sac more full of blood and more tense. Nor do I believe, with Mr. Holmes, that the clotting begins at the seat of ligature and extends down into the sac. The only view I can put forward—and I quite allow it is only a tentative view—is, that the effect of the ligature is to alter the direction of the current of blood in the sac in some way. The blood does not go directly through the sac, as it used to do, but it comes into the sac and probably turns around the wall, and the consequence is that we have a deposit of fibrin taking place, and presumably a cure.

I have repeated that operation on more than one case, with very satisfactory results. Unfortunately, in one case in which I tied the left carotid, we were not aware that the right carotid was also, to a certain extent, obstructed, and the result of tying the left carotid was to cut off the supply of blood from the brain to a greater extent than the brain would bear, and the patient died from the immediate effect of the ligature. But the other cases in which I tied the left carotid have been very satisfactory.

Now, leaving the question of ligature altogether, just one word with regard to the pressure treatment. The Irish surgeons especially

distinguished themselves in carrying this out, and there is no doubt that if pressure is judiciously adapted between the heart and the aneurysm, there will be slowing down of the current of blood, a deposit of fibrin, and probably a cure.

That pressure may either be digital, with the fingers of assistants, or instrumental, by means of certain screw apparatuses, which are adapted for the purpose. For my own part, I think digital pressure is by far the more satisfactory, and what we aim at is this: We have a relay of assistants, who keep up pressure upon the femoral artery for a certain number of hours, so as to allow no blood whatever to pass through it. If we stagnate the blood in an aneurysm, that blood will probably coagulate, and that is what we are aiming at; and with careful assistants, relieving each other every ten minutes, I have been able to carry out that treatment in certain cases very satisfactorily. The great thing is to have a tractable patient, and to get him to take an interest in his own ease, because he will have to submit to a certain amount of inconvenience; and then to have good assistants, who will relieve each other every ten minutes, and keep up pressure with their thumbs, the hand embracing the limb, and the thumbs coming upon the artery, one over the other. In that

way it is quite possible to keep up the pressure without any very great effort, and to cure the aneurysm.

But the cure is somewhat uncertain. Some cases you can cure in five or six hours; in other cases you may work for twelve hours, and then it is better to give it up and let the patient have a quiet night and begin again the next morning; and thus perhaps you will succeed on the second day, or even the third day, and if you don't succeed then, it is better to give it up and to tie the artery. In fact, in the present day, with antiseptic surgery, it becomes really a question whether in many cases it is not better to tie the artery at once. Where a patient is elderly, irritable, and with arteries considerably diseased, I think, really, it is better to tie the artery at once, and I say so because I have done it in many cases.

I had a gentleman, two years ago, with an aneurysm on one popliteal artery, and I tried pressure for some hours, and then tied the artery. The next year he came back with an aneurysm on the opposite popliteal artery, and, wise by my former experience, I at once tied the artery without any further trouble, and he was completely cured. The simplest clamp is the screw, which we commonly know as Signorini's tourniquet, and two can be used

if necessary, to relieve the pain. There is, also, a more complicated arrangement by Carte, a Dublin surgeon, which is sometimes useful, but not, perhaps, essential.

Let me mention here, so as not to omit it, the method which was brought into vogue a few years ago by Dr. Reid, a naval surgeon of England—the use of Esmarch's bandage and cord, for the treatment of aneurysm of the popliteal artery. Dr. Reid had a case in a sailor, and he bethought him that if he could stagnate the blood in the popliteal aneurysm and the whole leg, for an hour or two, probably a cure would be effected. Accordingly, he put Esmarch's bandage on the limb, and then, having carried the cord around so as to keep the blood perfectly stagnant, he put the patient under the influence of chloroform for an hour or two—for the pain was too great to be borne without—and a cure resulted.

I used the plan on two occasions some years ago, and I may say that I think it is very important that the aneurysm should be full of blood. Therefore, I do not hesitate to bandage the limb from below up to the aneurysm with Esmarch's elastic bandage, and to bandage also from above downwards with another elastic bandage, and then put the cord around, so that I am sure the aneurysm is full of blood ;

because, if not full of blood, I do not think it is likely to coagulate. I had two cases which were quite satisfactory, but I have given up the practice for this reason : because I found that in other surgeons' hands, not my own, but in very excellent surgeons' hands, more than one case of gangrene had occurred. It seemed to me unwise to expose the patient to the risk of gangrene, which would lead to the loss of his limb, when the operation of ligature could be so readily done, and, in modern times, was so exceedingly satisfactory.

Let me conclude by saying a few words with regard to the ligature, both the material of the ligature, and also the method of tying it. The whole subject, of the application of the ligature and the changes which take place in a tied artery, was thoroughly worked out in the early part of the present century by Dr. Jones, of England, and his book is really an authoritative one on the subject. He showed, that when you tie a round ligature tightly upon an artery, the internal and middle coats are divided, that they contract and retract above and below the ligature, and that the ligature ties merely the external coat. Then, as a subsequent matter, that a clot forms above and below the ligature, the divided coats of the vessel becoming more or less inverted, and that they subsequently become occluded above and

below by lymph, the ligature coming away by ulcerating through the small remaining portion of the external coat tied in the loop.

No one has ever improved upon that, I think, until Lister introduced what we call now the aseptic ligature—I mean the catgut ligature. There had been various attempts, and Sir Astley Cooper and other surgeons had tried to use an absorbable ligature, but they all failed, because the ligatures became more or less putrid and offensive. Lister showed us that, by using properly prepared catgut, it would be possible to tie an artery successfully, and, as I mentioned just now, I used catgut in my first case of left carotid ligature. The success which has followed the use of catgut is very remarkable, but still there have been a few failures. I had myself a case where I tied the femoral artery with a catgut ligature, and two days afterwards it was found that the artery was beating as freely as ever and the aneurysm too, and it was quite clear, therefore, that the catgut had given way rather too early. I put on a silk ligature a little lower down, in Hunter's canal, and the patient got perfectly well. My friend, Sir Thomas Smith, surgeon to St. Bartholomew's Hospital, was a little less fortunate. He tied an artery in the same way with catgut, which gave way, but, unfortunately, the artery became

weakened at the spot and became aneurysmal at the seat of the ligature, and required a subsequent operation for its cure.

In addition to that, Mr. Barwell, whom I mentioned just now, as having probably had more cases of double ligature of the carotid and subclavian than any other surgeon, introduced a ligature which he thinks very highly of, but of which I have no personal experience, and it is made from the ox aorta. The aorta of the ox is prepared, and the middle coat of it, the thick elastic coat, is rendered aseptic. Mr. Barwell ties the artery with that, and he has had very good success with it, but I do not believe that it is really very much better than catgut or silk.

Until of late years the surgeon, following Dr. Jones's teaching, always tied the artery as tightly as he could—that is to say, he tied it until he felt the giving way of the tissues beneath the ligature, and he tied usually with a reef knot, which I need hardly tell you is a very firm knot, which does not slip. But of late years there has been a suggestion from Mr. Ballance, of St. Thomas's Hospital, that the reef knot is not the best knot, and he very much prefers a knot which is called a stay knot, which is made by having two surgical knots with a double twist in them, and then tying them together afterwards. But more

than that, Mr. Ballanee has tried to convince surgeons that they are wrong in dividing the coats of the artery, and that it is sufficient to approximate them, and to hold them firmly by the ligature.

So convinced is he of this that, going over the museum specimens, he has pointed out that in certain specimens the ligature appears to have slipped, and of this very specimen of mine—of a ligature of the left carotid—a drawing is given in his book, which seems to illustrate it. I was rather surprised when I read that, and I went and looked at the specimen and found that it and the drawing do not agree, and I do not believe for a moment that my ligature slipped. For my own part I believe it is entirely a mistake, and I wish to make a protest against the statement.

I believe we have done perfectly rightly in following Jones's teaching in tying the artery as tightly as we can, in order to lead to the division of the middle coat, and I for one shall go on doing it. I believe that we have much greater safety for our patients in doing it; that the changes which take place after the ligature depend mainly upon dividing the coat, and that after mere approximation there will be no very great difficulty for the current in the artery to be reproduced at some time or other.

Before leaving the subject, let me say that only within the last few weeks, just before I left England, I received a very remarkable paper by Professor Murphy, of Chicago. Professor Murphy, whose name you all know in connection with the button which is used for intestinal anastomosis, has shown in this paper something quite new, which will have a very important bearing upon the treatment of aneurysm. He has shown that if you choose to cut a piece out of an artery—absolutely to cut, say an inch or an inch and a half out of an artery—if you then put one end of the artery into the other end and stitch them together they will unite.

So far as I know that is an entirely new fact in pathology, which has never even been suggested before. Professor Murphy not merely shows this by experiments upon lower animals, but he records a case of pistol wound of the femoral artery, where he cut out the piece of the artery through which the bullet had gone; and then, bringing the two ends together, he inserted one into the other and stitched them together and they united, the patient making a perfect recovery. I need hardly point out how very materially that may and will, in all probability, modify our treatment, because, if we can cut out small aneurysms and bring the arteries together, it of course will

be the most desirable thing for the patient. I think it is well that you should know that this advance in surgery has been made, and I, for my own part, regard it as a very important one.

ON
SYPHILITIC DISEASES OF THE
TONGUE

GENTLEMEN,—We have had lately in the ward a remarkable case of gumma of the tongue, and I thought it would afford a good opportunity to say a few words to you concerning syphilitic diseases of the tongue, considering that cases of that description form a fair proportion of the affections you will have to treat in your practices hereafter.

With regard to primary syphilitic disease or chancre of the tongue, I have first to say that it is a very rare thing. Personally I do not remember to have seen an actual chancre of the tongue, but I can show you here, in a German book containing good illustrations, a picture of a tongue with a chancre upon it. A chancre of the tongue, like a chancre of the lip or of the finger, does not present that remarkable hardness which a chancre on the genital organs does. It is very important to remember that, and when you see a patient

with a sore upon the lip (and sores on the lip are more common than on the tongue), and notice that there is no induration of the sore, but that there has been very early and rapid enlargement of the lymphatic glands beneath the jaw, you may conclude, especially if the patient is a young person, that in all probability it is a chancre; the same thing applies to the tongue.

The way in which the tongue may be inoculated with the syphilitic virus will vary, and one can imagine abominable practices occurring in certain well-known cities, but I hope not in London, whereby actual inoculation of the tongue may take place. You must remember, however, that a person may get a chancre of the tongue or of the lip perfectly innocently; because there is no doubt, in the present day at any rate, that mucous tubercles in the mouth can produce a primary chancre in the mouth of another person. I wish to put this point strongly, because up to within recent times it has been denied, but no leading syphilographer nowadays questions that syphilis is communicable by mucous tubercles. Since then these mucous tubercles are common in secondary syphilis, considering the careless habits people have of using cups and spoons and pipes after one another, it is not wonderful that from time to time a primary chancre

should occur on the tongue. Primary chancre of the tongue must of course be treated like chancre elsewhere, that is to say with mercury.

Referring to the evidence of constitutional syphilis, we happen to have here to-day a patient, who, as you see, has a well-marked secondary eruption. This man has evidently got secondary syphilis, and now on his putting it out you will notice that he has a fissured tongue, and I have no doubt that at some period the site of these fissures was marked by mucous tubercles. I say so because I find that, on turning his lip out a little at the corner, it will be seen that the lip and the tongue have mutually inoculated one another. It is common to find further back in the cheek patches of mucous tubercles, which are distinctly inoculated from the tongue to the cheek. These mucous tubercles are just the same "mucous plaques," as we call them, that you find so commonly about the female genitals. We do not so often see mucous tubercles about the male genital organs, because in the male the skin is kept dry; but in the female, where there is moisture and probably some vaginal discharge, we very commonly get on the moist skin about the vulva and the anus mucous tubercles, of which I can show you a very good representation in this book.

Here, in this man I now show you, there is

exactly the same condition of things about the mouth, that is to say, one moist surface with another moist surface constantly touching it in a patient under the influence of the syphilitic poison, resulting in the development of mucous tubercles.

These mucous tubercles may, moreover, occur, as the result of congenital syphilis, in children who exhibit other evidences of congenital syphilis, such as coppery patches about the buttocks and mucous tubercles about the anus. This is very important, because a child with mucous tubercles about the mouth may so easily infect a woman whose nipple it sucks, though it cannot infect its own mother, she having already syphilis in her system; this is known as "Colles' law."

Another symptom of constitutional syphilis about the tongue and mouth is the development of inflammation superficial in its character. With it we get very commonly a shedding of the superficial layers of the mucous membrane of the tongue, including the filiform papillæ. I believe that condition is much more common than is supposed, but it is not often seen, for what we more commonly meet with is the condition seen when the patient comes complaining of a sore tongue, with a history of having put up with the soreness for some weeks. Here the appearance has become

altered, and more commonly the bald patch is found, which is so significant of secondary syphilis of the mucous membrane of the tongue and mouth. The patient may have gone through the first stage without its having been recognised, and as a result of that shedding of the epithelium there is a certain amount of cicatricial tissue causing smoothness of the surface of the tongue, recognised as the characteristic "bald patch."

We may have another condition following that—namely, inflammation going on to ulceration, and this may show itself in various ways. It generally is a multiple ulceration, making grooves in the side of the tongue, not affecting very much the dorsum, but involving fairly deeply the sides and tip of the organ. I send round an illustration, and in Fig. 1 of this plate you will see fissuring of the tongue and some hypertrophy of its tissue. Here is a better illustration, which shows exceedingly well the appearance after the ulceration has healed, and we have there a certain amount of thickening; you will notice also the sulci or grooves which have been cut into the tongue by the process of ulceration. That process may, of course, extend a good deal into the tissue of the tongue, and you occasionally find, as is shown here, a true glossitis or inflammation of the tongue due to the syphilitic poison.

In the case of the woman whose tongue I lately removed, you may remember that I called attention more than once to the fact that behind the gumma there was an ulcerated surface due to syphilis, so that we had there the late secondary and the tertiary manifestations of the disease together. You may even have the tongue split down the middle by ulceration; it is rare, but it does occur now and again.

We have, then, this ulceration, and we may have either with or after the ulceration a very considerable amount of chronic thickening of the tongue—a thickening of perhaps only one side of the organ, and of a very chronic character. This thickening of the tongue is apt to alarm a patient, who immediately begins to think that he is suffering from malignant disease. I have no plate here which shows it, but you can understand that where there is chronic inflammation there may be chronic thickening, and that one side of the tongue may feel hard and lose a good deal of its ordinary healthy characteristics.

The treatment for all forms of secondary syphilis of the tongue I am quite sure is the same, and that treatment is the administration of mercury. There is no use whatsoever in attempting to treat secondary syphilis of the tongue with potassium iodide; you must give

the patient mereury, and you must push the mereury not merely eonstitutionally, but loeally, if you wish to make a eomplete eure.

I am in the habit of using a mereurial mouth-wash, beginning with a strength of gr. $\frac{1}{4}$ of perehloride of mereury to the ounce, that is to say, about 1 in 2000, and this strength I gradually inerease. My usual prescription is perehloride of mereury, gr. $\frac{1}{4}$, with 2 draehms of honey made up to an ounce of water. I tell the patient to take a mouthful of this, and to have his wateh out and see that he holds the lotion in his mouth for five minutes by the wateh, as five minutes is a longer time than most people think. It is quite useless merely to tell sueh a patient to use a mouth-wash; then he simply gargles a little and spits the lotion out, and that is of no use at all. The tongue must be "piekled," and if the patient takes his wateh out and breathesthrough his nose, and holds the lotion in his mouth for five minutes two or three times a day, it is astonishing how these tongues improve.

Mereury must also be given to the patient internally, and there are many ways of giving it. I have myself eome to the eonelusion that there is no more satisfaetory way of giving mereury than by inunetion, that is to say, by rubbing it in over night when the patient is going to bed. The patient should

rub the mereury into the inner part of the thighs or the front of the belly, beginning with half a drachm of the blue ointment and going on to a drachm. This rubbing may be continued for many nights together without producing irritation, but if that occurs then the site of the rubbing should be shifted to the lower part of the abdomen. One great advantage of prescribing mercury in this manner is that it gets into the system very gradually, and that the patient is not affected in the mouth. The patient bears the drug better, and it is a more satisfactory plan than giving mercury by the mouth. You must warn the patient that, though he may have a daily warm bath to cleanse himself, he should not use soap except once a week, when the ointment may be washed away. I generally recommend a man to wear pyjamas, and to wear the same pyjamas every night for a fortnight or three weeks, in that way securing the entrance of mereury into the system without any inconveniencce.

Most of you have heard that at Aix-la-Chapelle there is a system of treating syphilis which is certainly extremely valuable. That system is nothing more nor less than what I have been describing to you. The people at Aix-la-Chapelle make a great fuss about the value of the sulphur water and the sulphur baths in use there; these are certainly very

pleasant, but they have no real bearing on the cure; it is the steady daily rubbing in of the mercury by the attendants which produces such marked effects. The course at Aix-la-Chapelle is for six weeks, and it is easy to get a patient here in his own house to rub for six weeks, and then perhaps he may leave it off for a month or so, and then resume for a time. With reasonable precautions against getting wet and taking cold, I have found no difficulty in this treatment being carried out.

It is very important that you should never salivate a patient, that is a thing of the past; to avoid salivation it is the custom at Aix-la-Chapelle to use an alum mouth-wash. Every patient there carries about with him this mouth-wash, and he is continually rinsing out his mouth. I have no doubt that if a patient be treated in this systematic manner the most marked curative effects can be secured.

Now let me draw your attention to the fact that there are cases of syphilitic tongue on the borderland between the secondary and tertiary stages; I mean cases which are not actually gummatous, but which are instances of late ulceration, and these cases are satisfactorily treated in the way I have indicated. I have a drawing here, made as long ago as 1870, of the tongue of a man who was brought to me because it was thought that he had epithe-

lioma. I did not think it was epithelioma, and on looking over his body found on his thigh a well-marked eruption, which no one could possibly take for anything but syphilis. Under the influence of mercury that man's tongue got perfectly well, and I may add that there is no doubt that tongues have been removed, before now, for conditions which might have been cured by mercurial treatment. When I hear of a patient remaining well for years after removal of the tongue for epithelioma, I have my doubts as to the correctness of the diagnosis; and this is only natural in the case of patients surviving for many years such a deadly disease as epithelioma of the tongue.

We will now consider tertiary syphilis of the tongue, of which we have such a remarkable example in the case of the woman who came into the hospital early in October. She is a middle-aged woman who had got what no one could doubt was a well-marked ulcerated gumma of the tongue. She happened to come in at the time of the October examinations at the Colleges, and I sent her down as one of the cases. I believe there was only one opinion expressed, and that was that it was a case of well-marked gumma of the tongue. This gumma, you will remember, was in the ulcerated condition, and you must bear in mind that before it was ulcerated there was a hard mass to be noticed,

involving nearly the whole of the right side of the tongue; but in her case there was something more, for all through the tongue there were little nodules of syphilitic deposit. It was one of those cases of multiple gummata which are not commonly seen, the deposit spreading through the substance of the tongue.

In addition she had an enlarged gland under the chin. I thought myself that the state of irritation of her mouth was sufficient to account for that enlargement, and I did not at first consider that there was anything of a malignant character about the condition. I said at the time, incorrectly however, as it turned out afterwards, that we should cure the case by full doses of potassium iodide and a mercurial mouth-wash. We began with moderate doses of potassium iodide, giving it combined with ammonia and bark. She was put upon 10-grain doses, and seemed to be improving, and then we increased the dose to 20 and finally to 30 grains, but we noticed that she did not further improve.

In consequence of a tendency to salivation I was obliged to stop the mercurial mouth-wash, and give her a lotion containing myrrh. What I generally order is just sufficient tincture of myrrh poured into warm water to make it milky. After some little time I felt quite sure that if there was not an epitheliomatous condition present there ought to be,

because the patient did not improve. It was clear that it would be better for her to get rid of the tongue than to allow the organ to continue in that condition, and the patient herself was only too glad to consent. A fortnight ago, therefore, I took away the whole tongue, and you may remember that I had to put my clamp-forceps behind the circumvallate papillæ just in front of the epiglottis.

On taking away this large tongue it showed to the naked eye the pasty appearance in the red muscle which is so characteristic of gumma, and there were also present the small gummata scattered through the tongue which I have mentioned. I particularly said to Mr. Curtis, the surgical registrar, that I hoped he would make a careful examination because I was not at all satisfied that it was solely a gummatus condition, and eventually, quite at the back of the tongue, Mr. Curtis found a very distinct mass of epithelioma, a small amount certainly, but distinctly epitheliomatous. A specimen has been placed under the microscope for you to see to-day, and you can recognise there what no one can doubt to be epithelioma.

It is clear, then, that this patient, having gone through a prolonged course of ulceration of the tongue, eventually developed epithelioma, and I am glad therefore that I have removed the entire tongue. I hope I have removed the

whole of the disease, but though I went close to the epiglottis, I am afraid she will have further trouble in connection with the glands in the chin. You will remember that last Wednesday I very carefully scraped them out, and cleaned up the part generally; and we must hope for the best.

In connection with these cases of gumma of the tongue which go on for a long time and develop epithelioma, I will quote to you a saying of Mr. Jonathan Hutchinson: "If you irritate a part sufficiently long you may grow epithelioma." As an example of this take the irritation of a pipe continually affecting a lip, and ending in the development of epithelioma of the part; and this is a well-known clinical fact, for we hardly ever meet with epithelioma of the lip except in males who smoke. Given, therefore, any prolonged irritation, you have the probability that epithelioma will grow, and that is exactly what happened in the case of this woman. It is this sort of case which is brought to you with a history that the patient has had a sore tongue, and has been under judicious medical care, with the result that, though the tongue has improved up to a certain point under potassium iodide, yet it has never got well. These cases of a double kind, if one may so call them, which have epithelioma grafted on to a gumma, may, and

do, for a short time improve under the influence of potassium iodide, for no doubt the ordinary small-celled inflammatory exudation becomes absorbed, and things improve for a time; but potassium iodide has no effect whatever on epithelioma, and the tumour goes on growing, eventually resulting in some operation having to be done if the patient's life is to be prolonged.

The treatment of a gummatous condition I have already indicated, full doses of potassium iodide with the addition, as a rule, of a mercurial mouth-wash. It is astonishing what large doses of potassium iodide some of these patients will bear, taking sometimes 30 to 40 grains three times a day, with the result that eventually a thorough healing may occur.

There is one other thing I should like to say a few words about, and that is a disease of the tongue with which you are all familiar, which we call leukoplakia, and I put it last because it is by no means always of syphilitic origin. Leukoplakia may occur entirely apart from syphilis, the common cause being tobacco, but if a patient is not only the subject of syphilis but also smokes tobacco, he is very likely to have a much worse tongue than if he were free from syphilis. Although I do not say that every case of leukoplakia is complicated with syphilis, as of course that would be incorrect, still I do say that many cases arise in

conjunction with syphilis, the result partly of syphilis and partly of local irritation, and further, I believe that you must always have that local irritation present in order to produce leukoplakia.

In connection with the subject of my lecture, there is another thing I must mention, and that is the condition known as warts. I show you here a man with tertiary syphilis of the palate and throat, and the point I want you to note is that at the base of the tongue, quite at the back of the organ, there is a somewhat warty condition. That is not a very common thing, but the condition is one of the evidences of syphilis, and this case affords a good example of it. He is being treated for tertiary syphilis, and you will notice that his face is scarred and that his palate is perforated. I am treating the warty portion of the tongue with nitrate of silver, and if necessary I shall try chromic acid, 10 grs. to the ounce. Another useful application is cyanide of mercury, 15 grs. to the ounce, brushed over the affected portion of the tongue. This often does wonders for this sort of thickening, and also for old chronic ulceration. It is necessary, of course, to be careful that the patient does not swallow any of the application.

I need hardly remind you that you must not confuse the syphilitic warts at the back of

the tongue with the condition that sometimes is seen on a perfectly healthy tongue ; I refer to slight hypertrophy of the papillæ. I lately saw a case of wart of this kind in a gentleman who had not the slightest trace of syphilis about him, it was merely a slight hypertrophy of one of the papillæ of the tongue, and the best treatment is to touch it with the acid nitrate of mercury.

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ON
A CENTURY OF SURGERY

GENTLEMEN,—As I address you to-day for the first time in the last year of the nineteenth century, I have thought I might venture a little out of the beaten path of clinical surgery by giving you a sketch of the surgery of the century.

Military Surgery.—I would remind you that at the beginning of the century Europe was plunged in war; that Britain was constantly engaged in fighting with Napoleon, either in the Peninsula or elsewhere, and that, lastly, came the final and great victory of Waterloo in 1815; and, therefore, that during the first fifteen years of the century the attention of surgeons was more or less directed to the injuries inflicted on the field of battle.

The surgery of that day was rough and ready. The surgeon followed his regiment to the field of battle. He did his best at the time to arrest hæmorrhage, and then subsequently—either on the field or in adjacent houses, or

in a hospital, if possibly there were a hospital—he did his best by amputating maimed and shattered limbs to save the patient; but, necessarily, although we have very few statistics of those days, the mortality was exceedingly high. But, still, the Army Medical Service was a very good training for the surgeon.

Samuel Cooper, who was afterwards the Professor of Surgery in University College from 1831 to 1847, and the author of works well known in those early days, but perhaps not so much so at present—namely, Cooper's "First Lines of Surgery" and Cooper's "Surgical Dictionary"—began his life as an army surgeon; he served with the British army for many years, and only on the conclusion of that service did he become a civil surgeon. So also Guthrie, who lived to be thrice President of the Royal College of Surgeons, who was Surgeon to the Westminster Hospital, and founded the Westminster Ophthalmic Hospital, was for many years an army surgeon; and his valuable work upon the surgery of the arteries was based mainly upon the experience he gained in the Peninsular War. So also with the Scotch professor of surgery, Ballingall, who was an eminent man, and who also derived all his experience from the field of battle. Lastly, do not let us forget that most eminent surgeon Baron Larrey, who was so highly esteemed by

his master, the first Napoleon, that he said when Larrey was present it was equivalent to an extra army corps, because the soldiers felt that their wounds would be looked after, and their interests would be considered.

Amputation.—Among the questions which necessarily arose during the period of the wars was that as to how amputation should be best performed. You must bear in mind that in those days all the amputations were circular. They were made as recommended by John Bell, of Edinburgh, by first cutting circularly through the skin and then turning it backwards; then a second section was made through the muscles, which were also retracted, and finally the bone was divided high up. Remember, if you please, that this was before the days of anæsthesia, and consider for a moment what such a tedious and necessarily painful operation must have been for the patient to support.

But in the north there was a surgeon growing up named Robert Liston, who saw that an improvement might be made in rapidity and also in getting a better covering for the bone, by what we call the flap method. He practised that first at the Edinburgh Infirmary, and then when he was called to London to be Surgeon to University College Hospital in 1836, he introduced the practice here, and he was the

first surgeon who undertook amputations by the flap method in any London hospital.

His method had the advantage of rapidity—being a very powerful man, over six feet in height—he would grasp a thigh, transfix it with a long knife, and cut one flap above and another flap below the bone, draw back the flaps with his left hand, saw through the bone, and pride himself on doing it all in less than one minute. Well, that was of course quite a new thing. Surgeons had never before seen such rapid amputations, and I need hardly say that to the unfortunate patient who had to put up with the agony of the operation the rapidity was a great gain.

I am not old enough to have had any experience of surgery before the days of anæsthesia, but I have learned from those who had, that they gave their patients a good stiff glass of brandy and water immediately before the operation, and that it was with that kind of “Dutch courage,” if one may so call it, that they managed to submit to these terrible mutilations. I had an opportunity once of talking to a patient who had had his thigh amputated before the days of anæsthesia, and I asked him to tell me what it was like. “Well,” he said, “you know what a bad burn is?” I said, “Yes, I do.” He answered, “Well, it was exactly like that; when the knife went through

the flesh of my thigh it was exactly as if I was burned as severely as possible." One can easily understand that that does represent very fairly the feeling which would be induced by the transfixion of the living tissues of the limb by a long knife carried rapidly through it.

The flap method having been introduced by Liston, it was found by him and by other surgeons that by adapting it to various parts of the body, it was possible to give a better stump, and to make a longer one than by the circular method.

But it was also found that the fleshy flaps were sometimes very inconvenient, and hence when anæsthetics came in, and the necessity for rapid operating passed away, surgeons found that it was possible to make better stumps by other methods than transfixion of the limb. Foremost amongst those innovators must be mentioned the late Mr. Teale, of Leeds, who early in the Fifties introduced rectangular flaps cut from without inwards, and including the whole of the tissues. Mr. Teale gave strict measurements for his flaps; thus the anterior flap was to measure half the circumference of the limb at the point of section both in length and breadth, and the posterior flap was to be a quarter of this in length. Naturally, with such unequal flaps the anterior was folded over the end of the bone, and the cicatrix

came behind and far from the divided bone, instead of being, as it often was in the transfixion operations, adherent to it. It was found that Teale's method made stumps which would bear pressure well, but were very short stumps; and then gradually surgeons found that they could get all the advantages of the method without its drawbacks by cutting skin flaps, with little or no muscle, long enough to cover the end of the bone and to meet similar flaps behind, and this is the method universally adopted in the present day.

I would just allude to that very interesting amputation which is generally connected with Mr. Syme's name. He showed that by dissecting a flap off the heel of the foot he could take away the foot and leave a limb very nearly as long as the opposite one, and that the patient was afterwards able to walk upon the stump. We still practise that operation, for it is an exceedingly good one in appropriate cases, and it is one of the best examples I know of the improvement brought into surgery by the flap method.

Resection and Arthrectomy.—Up to the middle of the present century, or very nearly so, amputation was done in all bad cases of diseased joints. Patients were encouraged to bear their diseased joints as long as they could, and when they could bear them no

longer, or when their strength was giving way, as a last resource the surgeon recommended and performed amputation. But when anæsthesia came in, in the year 1846, the whole thing was altered. Surgeons found then that they had time during the anæsthesia to deal with joints in a very different way from what they had done previously, and it was then, owing to the efforts of Syme and Liston, and Fergusson particularly, that the operation which we call resection came in. By resection we mean that instead of cutting off a limb where there was disease, the joint was opened, the diseased ends of the bone were removed, and the fresh-cut ends, being brought together, united, and the patient recovered with a straight, stiff, and somewhat shortened limb.

Then again, of late years, upon that even an improvement has been made, and we now have the method of "arthrectomy." In a comparatively early stage we expose the interior of the diseased joint, we clip away all the diseased tissues, we scrape away any diseased bone, we apply antiseptics in the form of iodoform to the interior of the joint, we dress the joint antiseptically, and we find that these patients recover with exceedingly useful limbs, and sometimes with movable joints.

Anæsthetics.—This brings me to the date—that very important year 1846—of the

introduction of anæsthetics. We owe the invention of that beneficent method to America, and particularly to the late Collins Warren of Boston, in whose *clientèle* it was that the first so-called experiment in anæsthesia took place.

There was a dentist named Morton, who lived in Boston, and he had made experiments with nitrous oxide gas, which, as had been known before, from the time of Sir Humphry Davy, produced a certain amount of excitement, and hence was called "laughing gas," but if pushed beyond that produced a temporary anæsthesia. Morton employed this in extracting teeth, and then he bethought him that he might possibly find something which would be a little more potent and more manageable. This he found in sulphuric ether, and then, having been successful in a good many cases of tooth extraction under the influence of ether, he spoke to Warren of Boston, and asked if he might have the opportunity to give ether for some patient upon whom he was to operate.

Accordingly, in October 1846, a day was fixed on which an operation was to be performed upon a patient to whom Morton was to administer the anæsthetic. Everything was ready for the operation, but for some reason Morton was late, and Warren rather sarcastically said, "The gentleman is not coming," and evidently thought that he had withdrawn and

feared the event. However, just as they were going to begin the operation, Morton arrived, and he administered the ether and Warren performed his operation. The patient was perfectly quiet, absolutely insensible, and would hardly believe, when he woke up, that the operation had been performed. Warren's comment upon it was, "Gentlemen, there is no humbug in this," and that was quite a true word, for it was from that date that anaesthesia began.

We have there the commencement of anaesthesia on October 17, 1846. The news of this was very soon sent across to England, and a dentist, Mr. Robinson, of Gower Street, extracted some teeth under the influence of ether. He invited Robert Liston to come and see a tooth extracted, and then Liston himself, on December 22, 1846, performed two operations in University College Hospital—in this very theatre—an amputation of the thigh, and the removal of a toe-nail, both operations, I needly hardly say, being excessively painful ones. The patients were put under the influence of ether by Dr. William Squire, who has only recently died, and with complete success. The news, of course, spread rapidly to Glasgow and Edinburgh, and within a day or two the thing was there repeated, and so anaesthesia became an established fact in Europe.

You will observe that in all these cases ether was administered, and ether held its sway for a few years. But Simpson, the great accoucheur, of Edinburgh, who afterwards became Sir James Simpson, was not quite satisfied with ether, and was making a search for some more portable anæsthetic and one which he could give to women in the pangs of labour. After various experiments, some of which were very dangerous, and were carried out on his own person and on that of Matthews Duncan, who was his assistant, he came upon a fluid which was called chloroform. He found that it was portable; that it easily put the patient asleep, and that it seemed to have some advantages over ether. Accordingly, chloroform came into fashion, and held its sway for a good many years, and then from time to time an unfortunate death occurred; and I think there can be no doubt in anybody's mind that, if caution is not used in administering chloroform, it is rather a dangerous drug, I mean that an overdose of chloroform, administered suddenly to a patient, may induce stoppage of the heart.

We did our best, however, and then there was a sort of reaction in favour of ether; and about the same time, thirty years ago, it first was brought out rather curiously, that the nitrous oxide gas—the old “laughing gas”—if it was administered pure, without any admixture of

ordinary atmospheric air, was a very potent anæsthetic; and it was shown, by various demonstrations which were given, that teeth might be extracted very readily and without any pain under the influence of the nitrous oxide gas. I need hardly say what a boon that was to dentists, and to the patients who had to resort to dentists. Accordingly, nitrous oxide gas became the fashionable means of producing anæsthesia for dental and other short operations.

But then it was thought that if it was possible to put a patient off quickly with nitrous oxide gas, why should you not go on administering ether afterwards, and so keep up the anæsthesia; and, accordingly, that is what we do nowadays. In the great majority of cases, unless the operations are about the mouth, the patient is anæsthetised very rapidly by being put first under the influence of the nitrous oxide gas, and as soon as he becomes insensible, which will be in something under a minute, the gas is withdrawn, the ether is turned on, and the anæsthesia is prolonged as much as may be necessary for the operation.

There is no difficulty, of course, in keeping a patient asleep for an hour, if necessary; but I think that sometimes surgeons make a mistake in the present day in being too deliberate

in their operations. In former days, when there were no anæsthetics, they were obliged to be quick ; nowadays, when we have unlimited anæsthesia, I think there is sometimes a tendency for the surgeon to be too deliberate, and, as a result, that his patient gets too much ether. I hear of patients being kept anæsthetised for two or even three hours, and a lady told me not long ago that she herself had been the subject of an operation which took four hours, and I could only say to myself I was surprised she was there to tell it me. When one hears of such lengths as that, one cannot but fear that an undue strain is put upon the patient's heart,

Antiseptics.—Let me go on now at once to the other great subject of the century, namely, antiseptics. There can be no question, and no one for a moment disputes it, that Lord Lister is entitled to the whole of the credit of having brought into being what we may call antiseptic surgery.

Mr. Lister, as he was then, was an old pupil and house-surgeon of this hospital, and he made the acquaintance of Syme when Syme came up for a very few weeks to University College Hospital, in order to succeed Liston. Syme, for private reasons of his own, went back to Edinburgh, and Lister followed him and became his house-surgeon. Then Lister,

having settled down in Scotland as it were, was appointed Regius Professor of Surgery at Glasgow; and it was in the old Glasgow Infirmary, a building which was in many respects most insanitary, that Lister was induced first to try whether something could not be done to improve the condition of his unfortunate patients.

He found that, do what he would, all his wounds suppurated, and the great majority of his patients died from infection of the system from the wounds; and he happened, more by accident I think than anything else, to employ carbolic acid. Carbolic acid, about that time, was coming into note as an ordinary antiseptic. It was used to throw down drains and to take away offensive smells, and so on, and he used it, and one of his earliest experiments was to take a case of compound fracture and to dress it with carbolic acid, and see what happened. What happened was that, to his very great surprise—and I am told by those who were present at the time and saw it, that Lister himself was perfectly astonished—when he came to open the compound fracture, instead of suppuration there was a clot organising in the wound, there was no inflammation, the part was quiet, and it was healing under the influence of what at first sight would appear to be a great irritant.

I am not going to follow out the details. It is sufficient to say that, thanks to Lord Lister, a system was inaugurated which has been modified slightly from time to time, but is now put upon a firm basis, by which we are enabled to keep our wounds perfectly sweet by having absolute cleanliness of the patient, of the surgeon, of the nurse, of the instruments, of all surroundings; and then by applying proper dressings of either an aseptic or antiseptic nature, according to circumstances, we have such results as our forefathers never could have anticipated. I mean that wounds heal without any inflammation, the patients lie quiet in bed and take their food from the first without any fever, and we are enabled not merely to save a great many lives, but we are able to undertake operations which we would never have ventured to undertake except with the assistance of antiseptics.

I am old enough to remember what amputation of the thigh came to in Fergusson's practice, and in Eriksen's practice, and in that of other very good surgeons. The patients almost all died. It was quite the exception when a case of amputation of the thigh got well. Nowadays, such a thing as a death from amputation of the thigh is hardly known; and if it does occur, one considers very seriously what could have gone wrong, that a patient

with an ordinary amputation of the thigh should have succumbed.

More than this, we are now able to do so much more for patients, the range of surgery has become enlarged, and the amount of surgery is much greater than it could possibly have been before the days of anæsthetics and antiseptics.

Vesical Calculus.—A subject which engrossed a great deal of attention during the century was the treatment of calculus. Calculus, of course, has been known in all countries for many centuries. We have early records of operations for calculus in Egypt and in the East, and we find that operations have been introduced and again abandoned from time to time, so that the whole history of the surgery of calculus in the bladder has been one of constant change.

I would just remind you that there was a great surgeon in England in the early part of the eighteenth century named Cheselden. He was Surgeon to St. Thomas's Hospital, and he had, very rightly, a great reputation for the lateral operation of lithotomy; and, consequently, he impressed upon not only his contemporaries, but also upon those who succeeded him, that lateral lithotomy was the best operation to be performed.

Accordingly, at the beginning of the present

century, the operation usually performed was by the lateral method, and with a very fair amount of success. Still, as Sir Benjamin Brodie says in his autobiography, there were no cases which gave him more anxiety than cases of calculus; because he, being in a large fashionable practice in London, necessarily had to do with persons of considerable note, and it was a matter of great importance, of course, that those valuable lives should be preserved. The death-rate of lithotomy was very high, and, accordingly, attempts were made by Civiale in Paris, by Leroy d'Etiolles, by Heurteloup, and by Weiss the English instrument maker, who gave most important assistance, to devise instruments by which a stone might be broken, and the fragments extracted from the bladder without any cutting operation.

Thus lithotrity was introduced, and I may say that one of the first attempts to break a stone was made with an instrument, consisting of two blades, in which the force was applied by means of a hammer. It seems now a very rough method of proceeding, which no one would think for a moment of adopting; and when Weiss, the instrument maker, showed that it was possible to adapt a screw movement, he used very much the same instrument that we have nowadays, consisting of a male and female

blade, in which the stone was crushed and broken up into fragments.

Sir Henry Thompson, Consulting Surgeon to this hospital, is well known to you all as a surgeon who has distinguished himself in perfecting the operation of lithotrity; and I may say that, having frequently witnessed its performance by his hands, I think he brought the method to as near perfection as was possible.

You will remember that at that time, although the stone was broken up by a series of "sittings," it was left to the natural efforts of the patient to evacuate the fragments. The first attempt to assist evacuation of the fragments was no doubt due to the late Mr. Clover, the anæsthetist of this hospital. It struck him that if some form of exhausting bottle were adapted to a catheter of large size, probably a good many fragments might be extracted; and although at first Sir Henry Thompson only used that instrument for the extraction of the minute fragments remaining at the end of the series of sittings, there can be no doubt that that was the beginning of the evacuation system.

But it is really to Bigelow, the eminent American surgeon, who died only a few years ago, that we owe the great improvement of what he termed litholapaxy, or better called, I

think, rapid lithotrity. As practised by most surgeons nowadays, it consists in putting the patient under the influence of an anæsthetic, and breaking up the stone into small dust by a series of manipulations at one sitting; and then, by means of a powerful evacuating bottle, drawing out the fluid contained in the bladder and all remains of the stone. This method of Bigelow's has no doubt opened up quite new features in the operation of lithotrity, and has enabled the surgeon to treat cases of stone which he would never have ventured to deal with by that method without the instruments which Bigelow devised.

Then, comparatively lately, within the last twenty years, there has been a recurrence to an old operation which dates probably many centuries back, namely, the suprapubic operation of lithotomy; and it is a curious fact that Cheselden, the great lithotomist, undoubtedly at one time performed the suprapubic operation in preference to the lateral, which, as I have said, became his favourite method of proceeding.

Petersen, a Danish surgeon, deserves the credit of having brought this suprapubic method again into practice. He showed, what every anatomist knew, that by distending the bladder with fluid it could be raised up sufficiently to avoid any danger of opening the peritoneum, when an incision was made above

the pubes. But he also showed, which was not so well known, that by distending the rectum with an indiarubber bag the tendency would be to elevate still more the bladder, and therefore to keep the peritoneum more out of danger. Accordingly he devised the modern suprapubic operation, which is now recognised by surgeons as being, perhaps, the safest method of lithotomy; so much so that at the present time, in England at least, the perineal operation has fallen into disuse, and I know that students in the London hospitals now hardly ever, if ever, see the old lateral operation performed. No doubt the suprapubic operation has the great advantage of inflicting no injury on very important and vital structures, and it certainly does give, as I know in my own practice, the opportunity of extracting very large stones, which could not possibly be removed by any other method.

Prostatic Disease.—While on this subject let me mention a treatment which came into vogue some twenty years ago, mainly by the efforts of the surgeons of the Leeds Hospital, for the relief of that very common affection of old age—enlarged prostate. It was found by several of the Leeds surgeons that it was quite possible to open the bladder above the pubes, and to remove with scissors any prominent portions of the prostate gland, with exceedingly

good results. Although this operation for some time had a certain amount of credit, it has fallen somewhat into disuse in Great Britain, and I do not hear of many operations of that kind being done now, nor have I thought it well to do any myself of late.

There is another matter in connection with the same subject to which I must just allude, which has come up of late, and mainly through the influence of an American surgeon, White; and that is the possibility of the operation of castration having a very marked effect upon the development of the prostate. The question is still *sub judice*, but so far as we can tell there is a good deal of truth in it, and I think that in suitably selected cases it is quite a legitimate and proper procedure, and the same may be said of Mr. R. Harrison's proposal to divide the vas deferens.

Ovariectomy.—Next I must refer to the operation of ovariectomy. There can be no question that the first ovariectomist was Ephraim McDowell, who was born in Virginia in 1771. He came over to England, as was very much the custom with Americans in those days. At Edinburgh he came into relation with Lizars, who was a surgeon of that city, and who had the notion, though he had never carried it out, that it might be possible to remove an ovarian tumour.

McDowell went back to the United States, and settled down in a small practice in a mere village (Danville, Kentucky), and there he happened to have a patient come before him in the year 1809—a Mrs. Crawford—who had a large abdominal tumour. The woman, as is so often the case, had supposed herself to be pregnant; but when months went on it became clear that it was not a case of pregnancy, and she applied to McDowell for relief. McDowell, entirely on his own authority, and apparently without consultation with anybody else, performed the first ovariectomy in this country village, and, most providentially, that patient got perfectly well.

There we have the history of the first ovariectomy. It did not make a great sensation. McDowell wrote to Lizars, and told him what he had done, and Lizars had a case or two himself; and then Clay of Manchester, Frederick Bird and Baker Browne of London, had each a few cases; but the operation was a very fatal one, and it did not seem to have been much taken up. In fact, ovariectomy was not really established as a recognised operation until Spencer Wells took it up in the year 1858.

Sir Spencer Wells died in 1896, at a good old age, and he had performed nearly 2000 ovariectomies in the course of his life. He began life as a naval surgeon, he went out to

the Crimea as one of the civil surgeons sent to Smyrna, and when he returned at the end of the Crimean war he was appointed one of the surgeons to the Samaritan Hospital, where he was seeing pretty constantly cases of abdominal tumour. At that time nothing was done for these cases except to tap them, and sometimes to inject iodine, which very seldom did any good.

Wells made up his mind that he would perform ovariectomy, and that he would continue to perform ovariectomies until he had ascertained whether or not the operation was a justifiable one; and he pledged himself from the first to publish all the cases and to show all the specimens, and he very carefully carried that out. I need not go into details, but he soon was able to see that, with due attention to the surroundings, with care in the selection of the cases, and with a certain amount of skill which he soon acquired in the operation itself, it was not such a fatal operation as was supposed.

I may say that McDowell's original operation was to tie the pedicle, and leave the ligature out of the lower end of the wound. Wells adopted the same plan at first, but, finding that was not very successful, he then fell back upon a suggestion of Mr. Jonathan Hutchinson—namely, to pull the pedicle out

as far as possible in the wound, and then to clamp it with a sort of callipers outside the abdomen; and for a very long time, for many years in fact, that was the method which he adopted.

In the course of time, about the year 1873, Lister's antiseptic treatment came in, and Sir Spencer Wells adopted it, and at the same time—because of course it was very important that the abdomen should be closed—adopted the plan of “tying and dropping,” as it is called, the pedicle—by which I mean that the pedicle was secured firmly by a ligature—dropped into the peritoneal cavity, and never heard of any more, the whole of the abdominal wound being closed. Now, whether Wells was right in attributing the great improvement in his cases to the adoption of the antiseptic method, or, as maintained by some authorities, that his improvement dated from the time when he tied and dropped the pedicle, I do not care to consider. It is quite sufficient to say that his mortality diminished, and that he was, at the time of his death, the most successful ovariotomist that the world has ever seen.

Of course there have been others. Ovariotomy is now a well-recognised operation, and out of it have grown many other operations. I mean that surgical gynæcology has become developed to a very great extent as the result

of these successful ovariectomies, and that the removal of the ovaries when they are not enlarged, the removal of uterine tumours, and even of the uterus itself, have followed upon the successful introduction of ovariectomy.

Abdominal Surgery.—There is another subject that I would say a word about, and that is the great advance in abdominal surgery generally; because it is not merely in the pelvic organs that so great an improvement has been made, but the other organs of the abdomen, which were formerly thought to be quite beyond the surgeon's skill, are now reached and relieved with the greatest facility. I would remind you that gall stones can be removed, not merely from the gall bladder, but from the ducts leading from the gall bladder, and that they can be picked out or broken down and extracted with very great success, and of course the relief for these unfortunate patients must be enormous. This applies not only to the liver, but also to the kidney, for it is now a matter of everyday occurrence that stones should be extracted from the kidney itself, and if that organ be extensively diseased it can be removed.

The surgery of the intestinal canal dates from 1839, when Amussat introduced his operation of lumbar colotomy for the relief of malignant obstruction of the rectum. During

the last thirty years not only has the operation been undertaken much more frequently and much earlier than formerly, but the introduction of inguinal eolotomy has given us an easier and more certain operation, and one which renders the patient more independent afterwards than the older method. Then, following upon eolotomy and to some extent dependent on it, came the removal of the rectum, at first by the anus and latterly by the operation with which Kraske's name is connected, and which you have frequently seen performed here by Mr. Godlee.

The whole subject of what is termed "intestinal anastomosis" has been worked out in the last twenty years, and Mr. Barker is entitled to the credit of much good work in that department, having had one of the earliest cases of gastro-enterostomy. The revival of the Lembert suture, with the various modifications of it, the ingenious contrivances of Senn and others, and last, but not least, the excellent button of Murphy of Chicago, have enabled the modern surgeon to perform operations previously impossible, with very considerable success. Even the operation of gastrostomy, which dates from the present century, and was at one time so uniformly fatal as to be almost abandoned, has been revived with much more hopeful results by the proceeding of Franke,

Nervous System.—Even the head and its contents have been the subjects of surgery, and not only has the diagnosis of brain affections been simplified by the researches of Ferrier and Horsley, but abscesses have been opened and brain tumours have been removed, with a certain amount of success.

The same may be said of the spinal cord, where laminectomy has in some cases proved very efficient in relieving the pressure due to accident or spinal caries. In connection with this subject I would remind you of the very successful case of Calot's operation for straightening a distorted spine, which was in my ward last summer.

Conclusion.—Time will only allow me to refer in the briefest manner to the various instrumental aids which surgery has obtained during the century. First comes the microscope, which, at first employed only by the few anatomists who made minute anatomy their study, is now the daily servant both of the physician and surgeon for the diagnosis of disease. About the middle of the century the ophthalmoscope came in and revolutionised the whole of the surgery of the eye. A little later the laryngoscope shed light upon the diseases of the air passages and nose; and still later the endoscope, and particularly the electric endoscope, has enabled the surgeon to

investigate the interior of the bladder and urethra, and to diagnose diseases of the kidney by watching the discharge of pus from the orifice of a ureter.

Lastly, let me mention the application of photography to the illumination of the deeper structures of the body. The Roentgen rays, as they are called, are no doubt extremely valuable. They bring into relief parts which are hidden from view by the skin and soft tissues covering them. But I think a little caution will have to be used, because it is not every structure which shows up equally well under the Roentgen rays, and I am afraid, if we do not take care, that we shall get into difficulties over our fractures. I find, as a matter of fact, that the callus or new material which is thrown out in order to unite the fracture does not show at all under the Roentgen rays. You can see the outline of the fracture, and you can see the broken ends of the bone, and to the unlearned it looks as if the surgeon had made a hash of his business. We must take care that this is clearly understood, or we shall be liable to actions for malpraxis.

THE HUNTERIAN ORATION, 1897

MR. PRESIDENT AND GENTLEMEN,—Before proceeding to deliver the fifty-eighth Hunterian Oration allow me to congratulate you, sir, on your restoration to health, and to express the gratification of myself and my colleagues at your being able to take the chair to-day. I have also to express my acknowledgments to my colleagues in the Council of this College, who have desired that I should undertake the duty of Orator on the present occasion; and next I have to thank those who have kindly attended here to-day to do honour to the memory of the immortal John Hunter. Allow me also to congratulate you on the fact that we meet in a rehabilitated theatre, which is, I hope, more comfortable to its occupants than the former one.

John Hunter was a great anatomist, a learned physiologist, and a profound pathologist, as his monumental museum and his numerous writings sufficiently show; but there

has been among the Hunterian Orators of late years a tendency, I think, to ignore the fact that Hunter was also a great surgeon. It will be my effort to-day to magnify the claims of John Hunter to have been a great surgeon.

When seventeen years of age John Hunter stayed for a time with his brother-in-law Buehanan, and thus acquired manual dexterity in the carpenter's workshop, which is, after all, no bad preparation for the art of chirurgery. In his twentieth year John joined William Hunter, and soon showed his dexterity as a dissector, and became by rapid strides a human anatomist. In the following summer he attended Chelsea Hospital under Cheselden, the leading surgeon of the day, and only entered as a pupil at St. Bartholomew's, under Pereival Pott, when Cheselden's health gave way. This was in 1751, and here Hunter must have seen a good deal of the best surgery of the day; but in 1754 we find him entering as a pupil at St. George's Hospital, where he two years later filled the responsible position of house-surgeon. In 1759 his hard work of various kinds had told upon Hunter's health, and he sought change of air by joining the army medical service, with which he served at the siege of Belleisle in 1761, and subsequently in Spain. Here he saw much surgery, and upon it he based his paper on "Gun-shot Wounds," and

showed how erroneous was the then received practice of invariably opening out bullet wounds. His paper on "Inflammation" also was to a great degree founded upon observations made at Belleisle, and in it he constantly refers to cases which came under his notice there.

Having thus added largely to his surgical experience, Hunter returned to London in 1763 at the conclusion of the war, and devoted himself to what little surgery came in his way, but worked hard at those researches in anatomy and physiology which have rendered his name immortal. In 1768 he was elected surgeon to St. George's Hospital, where he enjoyed for five-and-twenty years the opportunity of practising surgery before an admiring crowd of pupils, many of whom attained eminence in later life. Hunter was then in his fortieth year, which may be fairly considered a surgeon's prime; and it is not wonderful that he attracted as his pupils men like Jenner, Home, Carlisle, Abernethy, and Astley Cooper.

It is to be regretted that we have so little contemporary information respecting Hunter as a clinical teacher. That he did teach in the wards of St. George's there can be no doubt, for it is impossible to imagine Hunter failing to observe, to record, and to annotate verbally

or in writing the cases which must necessarily have come before him in that hospital. But the days of clinical clerks and surgical registrars were not yet come, and there is no official record of Hunter's work to be found at St. George's. How Hunter would have rejoiced in the complete system of recording not only cases, but post-mortem examinations and museum specimens, which now obtains in that institution, and in every other well-managed hospital, metropolitan or provincial! There were in those days no weekly and other medical journals teeming with records of clinical experience, nor were the then existing medical societies much affected by hospital surgeons. In 1783 the Society for the Improvement of Medical and Chirurgical Knowledge was founded by John Hunter and Dr. Fordyce, and to its "Transactions" Hunter contributed papers on "Inflammation of the Internal Coats of Veins," read in 1784, and on "Introsusception" in 1789; but for the first twenty years of his hospital work the clinical record is wanting.

In 1774 Hunter began a course of systematic lectures on the Principles of Surgery, of which the library of this College possesses manuscript notes of various dates by different members of his class. The well-known edition by Palmer, published in 1833, was taken from

the shorthand report by Mr. Nathaniel Rumsey of Chesham, of lectures delivered in 1786 and 1787, and no doubt fairly represents Hunter's teaching. It was these lectures which Astley Cooper and Abernethy attended, and which they and others found difficulty in following, mainly because of Hunter's defects as a lecturer; for he was not an attractive lecturer, his manner was heavy and his language inelegant and even coarse. Still these lectures did more to lay the foundation of modern surgery than any other work of the last century, and proved Hunter to be not merely a philosopher, but as I shall hope to show, a sound practical surgeon.

Thus he discusses in much detail the affections, common then as now, grouped together under the term hydrocele. He distinguishes between three species: "first when it takes place in the tunica vaginalis testis; secondly, when it occurs in the body of the testicle; thirdly, when in the spermatic cord;" and then proceeds to discuss the diagnosis and treatment of each variety. He lays down that a cure must be produced either by adhesion of the two surfaces of the tunica vaginalis (which he regards as rare) or by suppuration and granulation, and takes credit for having been the first to teach the latter. He discusses the treatment by incision and by caustic, and

combats the notion that the entire tunica vaginalis can be made to slough out and come away by the opening made with the caustic. Lastly, he recommends the following method, which will not, I fear, commend itself to the antiseptic surgeon of to-day: "Make an incision into the sac about three inches in length, and let the whole of the water escape; then fill it as full as possible with pretty stiff poultice, occasionally introducing your finger to direct the poultice into every corner of the bag; and lastly put some lint into the wound to keep the poultice in. The poultice should be made of linseed meal, and pretty stiff; if it is made into little balls it will be still more convenient. The advantages that this method has over the others are, first, that it is simpler than exposing the whole; secondly, the parts are kept universally distended by an extraneous body, so that the inflammation becomes universal; thirdly, the poultice does not become entangled in the granulations as dry lint does; fourthly, as the parts granulate and contract, the poultice is gradually squeezed out, and only requires superficial dressing during the whole time."

In his lecture on "Injuries of the Head," Hunter shows himself to be far in advance of his contemporaries, with whom trephining the skull was a matter of routine. He says, "In

cases of fissure of the skull only, it may admit of dispute whether we are always to trepan. If there is no symptom of an injured brain, certainly it will not be necessary. It may not be necessary even when attended with symptoms of an injured brain, for the injury may only be from the concussion, and we never trepan for concussion." Again he lays great stress upon the danger of opening the dura mater because of the occurrence of *fungus cerebri*, which was almost constant before the introduction of antiseptic dressings, and even now is not entirely unknown. He says, "Whenever I have seen the dura mater opened the brain has worked through the opening, and the patients have died. This was the case with a Mr. Cooper, whose dura mater I opened with a crucial incision on account of the state of the parts beneath; he died, and I think it is probable I killed him by opening the dura mater." Mark the honesty of the man—"It is probable I killed him!" Is the surgeon of to-day always as truthful?

Fashion reigned in Hunter's time as at present. Thus under the head of simple fracture we find him saying, "The position for the patient to lie in was formerly on the back, but the side is now generally adopted. However, I think its whole advantage is that it has the appearance of novelty, and is not a

real improvement ; *but time will establish the truth.*" Again, in speaking of fractured patella he says, " Before the year 1750 it was the practice to endeavour to bring the broken ends of the bones as near together as possible, with little or no motion allowed ; but after that a fashion arose (for we have fashions in surgery as in everything else, arising perhaps from a person happening to do well who had not been treated in the old way) of letting the parts separate, and of not forbidding motion so strictly : but now caprice has, I believe, had its day, and we are taught by reason and experience that the parts should be, when cured, as nearly as possible in their natural situation."

Here, thanks to Mr. D'Arcy Power, I am able to avail myself of a little bit of contemporary criticism in the form of an " Essay on the Fracture of the Patella or Knee-pan, by John Sheldon, F.R.S., Professor of Anatomy in the Royal Academy of Arts, London, 1789." Mr. Sheldon combats the view that extension of the leg relaxes the muscles attached to the patella, though, as he says, " those anatomists whose opinions I am acquainted with, as the late Dr. Hunter, Mr. J. Hunter, the late and present Professor Monro, and every other teacher or writer I have seen or heard of, have entertained the same opinion, though the contrary is evidently the case." He proceeds to

argue that the thigh must also be flexed upon the pelvis, a practice which has been generally adopted for many years, so as to relax the reetus; but he also recommends slight flexion of the knee, so as to relax the hamstrings—a useless and harmful proceeding.

In his lecture Hunter tells the story of a lady with an old fractured patella and great separation of the fragments, with consequent loss of power; and Sheldon speaks with approval of his plan of exercising the muscles of the thigh, by swinging the leg with weights attached to the foot. How both these surgeons would have appreciated my colleague Mr. Barker's simple plan of wiring the fragments together by the subcutaneous method! (*Brit. Med. Journ.* April 18, 1896.)

John Hunter's name is so inseparably connected with the treatment of aneurysm that it is almost unnecessary for me to maintain his claims to originality in his operation of applying a ligature at a distance from the sac, particularly after the exhaustive lectures on the subject of aneurysm which were given in this theatre in 1871-3 by Mr. Holmes. The claim put forward by French surgeons, and particularly by Broca in his classical work on aneurysm, for Anel as the proposer of the Hunterian operation will not bear investigation; for it is clear that Anel really placed

a ligature above the aneurysm, and in close proximity to it, and only differed from his predecessors in not laying open the sac. It is well known that this method and its varieties proved so fatal from secondary hæmorrhage that Pott, the leading authority of the day, recommended amputation as the only safe proceeding; and on this Hunter remarks in his lectures, "When the disease is in an advanced stage I agree with Mr. Pott in thinking amputation necessary and preferable. The earlier, therefore, the operation for the aneurysm is performed the better, not waiting with the expectation that an increased size of the aneurysm will produce an increased size of the collateral branches. If the artery, however, cannot be tied above the aneurysm in the operation, where can it be tied if the limb be amputated? *Why not tie it up higher in the sound parts where it is tied in amputation and preserve the limb?*"

The first operation performed by Hunter for popliteal aneurysm, by ligature of the femoral artery in Hunter's canal, was in December 1785, the patient being a coachman aged forty-five. Sir Everard Home gives full details of the case in the *London Medical Journal*, vol. vii. 1786, and vol. viii. 1787, and also in the first volume of the "Transactions" of a Society for the Improvement of Medical and

Chirurgical Knowledge, which was published in 1793, during Hunter's lifetime. It is quite clear that the vein was included in the ligatures, which were four in number two being tied and two kept in reserve. The patient recovered. Home gives four other cases operated on by Hunter, one of which was fatal; and on the fourth case it is remarked that "in performing the operation the vein was not included in the ligature," implying that previously the vein had been so included.

In the museum of this College is preserved the preparation of this historical case (3258) (obtained by Hunter "with some trouble and considerable expense" on the patient's death, fifteen months after the operation), a drawing of which accompanies Home's second paper in the *London Medical Journal*, 1787. "The femoral artery was impervious from its giving off the arteria profunda as low as the part included in the ligature. Below this part the femoral artery was pervious down to the aneurismal sac, and contained blood, but did not communicate with the sac itself, having become impervious just at the entrance. What remained of the aneurismal sac was somewhat larger than a hen's egg, but more oblong, and a little flattened. It contained a solid coagulum of blood, which adhered to its internal surface. A section made of this coagulum

appeared to be composed of concentric laminae, uniform in colour and consistence. The trunk of the femoral vein where it passed along the side of the tumour must have been obliterated."

Appended to the account of the dissection is the following remark: "The conclusion to be drawn from the above account appears a very important one, viz., that simply taking off the force of the circulation from the aneurismal artery is sufficient to effect a cure of the disease, or at least to put a stop to its progress, and leave the parts in a situation from which the actions of the animal economy are capable of restoring them to a natural state." We are not informed whether this statement of Home's had the support of Hunter or not, but it is a little remarkable that no reference should have been made to the collateral circulation, which has such an important bearing upon the formation of laminated clot within an aneurysm.

Our museum contains also, thanks to the late Mr. Thomas Wormald, the specimen from Mr. Hunter's fourth case, in which the vein was not included in the ligature. The patient was thirty-six years old, and survived the operation fifty years. "The portion of artery obliterated by the ligature extends from the origin of the profunda downwards to the division of the popliteal. A small oblong mass

of earthy matter occupies the situation of the aneurysm."

Of course Hunter's new operation had a certain amount of opposition, notably from his colleague Bromfield and from Percival Pott; but we find in Home's paper that Mr. Lynn, of the Westminster Hospital, had a successful case, the date of which is not given. Hunter was cursed with a candid friend, one Jesse Foot, surgeon, who published the year after his death "The Life of John Hunter," in which he criticised severely the whole of Hunter's professional career; but it is remarkable that he makes no allusion to the operation for aneurysm.

Of the separate volumes which Hunter published, the first was that on "The Natural History of the Human Teeth," and a "Practical Treatise on the Diseases of the Teeth," price £1 1s., 1778.

The late Mr. Thomas Bell, F.R.S., himself a distinguished dental practitioner, as well as for many years Lecturer on Comparative Anatomy at Guy's Hospital, in the preface to Hunter's essay in Palmer's edition, speaks of the work thus:

"If it may be stated that the work in question is perhaps the least felicitous effort of this extraordinary genius, and that of which the errors are the most obvious and striking,

some apology may be found even for these in the confined nature of the subject, and especially in the obscure and anomalous structure of the organs of which it treats; whilst the basis which his experiments and observations have laid for subsequent improvements in our knowledge, both of the physiology and pathology of the teeth, as well as in the treatment of their diseases, constitutes a never-ceasing claim to the gratitude and admiration of every scientific practitioner of dental surgery."

Mr. Jesse Foot, surgeon, in the "Life of Hunter" already mentioned, does not spare the author, but devotes no fewer than thirty pages to a detailed criticism of this work on the teeth, interspersed with remarks of a more or less scurrilous nature. Foot says, no doubt with truth, "John Hunter, at the time he published this book, had but very little practice, the whole circle being then filled up by names to which I have before alluded; and Hawkins, Bromfield, Sharpe, and Pott were proud and unaccommodating professional men. *They were above submitting to consultations with dentists.* Their patients, who wanted advice for relative complaints of the teeth, sent for or went to them, and from them took the instructions which *the dentists were to obey.* Hunter laudably condescended to accommodate himself to the

necessity of the case, and to fill up this ehasm in practice he placidly attended on fixed days and hours at the house of a dentist, to aid him by consultation for the benefit of his patients."

In chapter ix. which treats "Of drawing the teeth," Hunter has, to his caution against rapid extraction of the teeth, appended the following note: "I must do Mr. Spence the justice to say that this method appears to be peculiar to him, and that he is the only operator I ever knew who would submit to be instructed, or even allow an equal in knowledge; and I must do the same justice to both his sons." Foot thereupon says, "John Hunter was not found to bestow his smiles upon every dentist; his sincerity in friendship confined him alone to the family of the Spences;" and then proceeds to give a personal recollection of the elder Spence, dating from 1762, when he kindly extracted without fee a tooth from Foot, who was then an apprentice.

No doubt, as Bell has pointed out, Hunter made mistakes in his work on the teeth, particularly as regards the development of the second set, and their relation to the temporary teeth. But the sections on gumboils, on excrescences from the gum, on deeply seated abscesses in the jaws, and on abscess of the antrum maxillare show that he had considerable experience in the ailments connected with

the teeth and their surgical treatment. His chapter on "Transplanting teeth" shows how careful he was in dealing with all the details of such a delicate operation, which we know to have been highly successful in his hands, although eventually abandoned on account of the fear of transmitting syphilis.

In 1786 John Hunter published "A Treatise on the Venereal Disease," which excited a good deal of controversy at the time, and has been freely criticised during the last fifty years. Hunter had no doubt seen a great deal of venereal disease whilst serving with the army both at home and abroad, though he seems to have ignored to a very great extent the labours of others in the same field of inquiry. His reputation as an anatomist and surgeon was so great that the work was received both at home and abroad with acclamation. In 1787, the year after publication, French and German translations appeared. In 1788 there was a second English edition, and in 1791 the first American edition was published. There were not wanting, however, contemporary critics, and foremost among them must be mentioned Benjamin Bell of Edinburgh, and Mr. Jesse Foot, surgeon, to whom I have already referred. This last gentleman brought out a volume of 450 pages, in which he goes *seriatim* through Hunter's work, criticising as far as possible all

his statements, and speaking of him invariably as the "Professor," which he seems to regard as a term of reproach.

Unfortunately Hunter started with the idea that the poisons of gonorrhœa and syphilis were identical, and so early as 1767 made experimental inoculations upon himself with gonorrhœal matter, as he believed, but which no doubt was mixed with the discharge from a chancre within the urethra. A chancre and secondary symptoms resulted, for which mercury was taken, and in his own words "the time the experiments took up from the first insertion to the complete cure was about three years." After such a personal experience it is not surprising to find Hunter laying down explicitly, "The experiment proves that matter from a gonorrhœa will produce chancres." His critic, Foot, takes the same view, and says sarcastically, "I shall be glad to be informed by the Professor who ever doubted but that it [the poison] was the same!" It is the more curious that such an acute observer as Hunter should have fallen into such an error, for we find him laying down that "till about 1753 it was generally supposed that the matter from the urethra in gonorrhœa arose from an ulcer or ulcers in that passage, but from observation it was then proved that this was not the case." He proceeds also to show, by the examination

of the bodies of criminals known to be the subjects of gonorrhœa at the time of execution, that the prevailing belief in the existence of warts or growths in the urethra in all cases of gonorrhœa was incorrect.

Hunter seems to have had undoubting faith in the contradictory statements of his patients, and particularly of his female patients, the subjects of gonorrhœa. It is difficult otherwise to understand the conclusions he comes to, for they often appear to be entirely opposed to modern experience. His views also on swelled testicle do not commend themselves to the modern surgeon, for he held that the inflammation was due to "sympathy," and that the testicle "is never affected with the venereal disease, local or constitutional." However much in the present day we may disagree with Hunter in recommending a mercurial course for the treatment of gonorrhœa, we must allow that he thoroughly appreciated the various affections of the urinary organs which commonly result from and follow that disorder. Still more valuable are the chapters on "Supposed consequences of gonorrhœa," disorders which have proved a happy hunting-ground for the quack of many generations. Hunter's description "of the discharge of the natural mucus of the glands of the urethra" is brief but forcible: "The small glands of the urethra and

Cowper's glands secrete a slimy mucus similar to the white of an egg, not coagulated. This seldom appears externally or flows from the urethra but during the indulgence of lascivious thoughts, and is seldom or never attended to except by those who are either under apprehensions of a gonorrhœa coming on, or imagine the last infection is not gone off entirely, and are therefore kept in constant terror by this natural discharge."

He then passes on to speak of "the discharge of the secretions of the prostate gland and vesiculæ seminales," and expresses a strong opinion, in which modern physiologists agree, that the vesiculæ are not seminal receptacles. "It is a discharge of mucus," he says, "by the urethra which generally comes away with the drops of urine, especially if the bladder is irritable, and still more at the time of being at stool, particularly if the patient be costive, for under such circumstances the straining or action of the muscles of these parts is more violent. It has generally been supposed that this discharge is semen, and the disease is called a seminal weakness; but it appears from many experiments and observations that the discharge is undoubtedly not semen."

So highly do I appreciate John Hunter's good common-sense teaching on this important subject, that I have for many years kept this

page in his works doubled down, in order that I may read out an authoritative statement to those miserable persons who consult the surgeon from time to time for so-called "spermatorrhœa"—a word which one could wish eliminated from our language.

It is remarkable that the term "Hunterian chancre" should have been the universally accepted description of the primary syphilitic sore, for Hunter himself says: "Venereal ulcers have one character, which, however, is not entirely peculiar to them, for many sores that have no disposition to heal (which is the case with a chancre) have so far the same character. A chancre has commonly a *thickened base*; and although in some the common inflammation spreads much further, yet the specific is confined to this base." But what is most remarkable is that Hunter denied the existence of chancres on the mucous membrane of the vagina or cervix uteri, and *à fortiori* did not recognise such unusual occurrences as chancre of the lip, &c. Although the anatomy and pathology of the lymphatic system, including glandular enlargements, had made great progress during the previous century, yet the primary indolent bubo was not recognised as typical of syphilitic infection. Thus we find Hunter describing all kinds of buboes as occurring during the primary stage of syphilis,

and even advocating the mercurial treatment of suppurating chancre and inflamed buboes.

From what has been already said, it cannot surprise us to find Hunter's views of the *lues venerea* or constitutional syphilis little in accordance with the opinions of the present day. It will be sufficient to quote the following as regards the transmission of syphilis from parent to child. "It is supposed," says Hunter, "that a foetus in the womb of a pocky mother may be infected by her. *This I doubt very much.* However one can conceive the bare possibility of a child being affected in the womb of a pocky mother—not indeed from the disease of the mother, but from a part of the same matter which contaminated the mother!" Again, he says, "It has been supposed that such a contaminated child could contaminate the breasts of a clean woman by sucking her;" and yet a little later on he describes vividly enough the infection of a nurse by a syphilitic child!

Yet with all these mistakes, which it has taken nearly a century to correct, we owe John Hunter a great debt of gratitude for his unflinching faith in mercury as the specific remedy for syphilis. So long as varieties of venereal sores were undistinguished, mercury was, of course, often given unnecessarily and with disastrous effects; but if it had not been for

Hunter it seems likely that the heresy which the Bells and other Scotch surgeons promulgated, that syphilis did not require mercury for its cure, would have made much greater way than it did. Thanks to the labours of Ricord, Hutchinson, and Hill, the diagnosis and treatment of syphilis are now placed on a firm basis; and if it had not been for the "shrieking sisterhood," and the action of a few effeminate members of Parliament, we might now be rejoicing in the reduction of venereal disease in our army and navy by those most beneficent laws known as the "Contagious Diseases Acts," which were unhappily wiped out by a weak-kneed Government just when they were conferring the greatest benefit upon suffering humanity.

The papers which John Hunter himself contributed to the "Transactions" of a Society for the Improvement of Medical and Chirurgical Knowledge were only two in number. The first was read on February 6, 1784, and was "On the Inflammation of Internal Coats of Veins." The frequency of phlebotomy gave rise, as he says, to "a very frequent complaint, that is an inflamed arm after bleeding;" and he proceeds to show that this arose from the wound not healing by first intention. Numerous post-mortem examinations enabled him to state correctly enough that, as the result of inflam-

mation of the lining membrane of the vein, in some cases adhesion of the coats and obliteration of the canal took place; whilst in others suppuration ensued and abscesses had to be opened, or led to the death of the patient by what we now term pyæmia. It is remarkable that Hunter does not mention thrombosis, and does not appear to have recognised the formation of clot in the vein as an early stage of phlebitis.

In the treatment of phlebitis Hunter urges the application of a compress to produce adhesion of the surfaces of the vein; and though this can be but of little service, it is noteworthy that he should have anticipated the proposal of Mr. Henry Lee to pass a pin beneath the vein, so as to prevent pus getting into the circulation, by upwards of seventy years. Nothing is more remarkable in the present day than the almost absolute safety which attends the removal of portions of varicose veins, as recommended by the late John Marshall, provided strict attention be paid to asepsis.

Hunter's second paper was read on August 18, 1789, and was "On Introsusception"—as it was spelt in those days. He says, "When the introsusception is downwards it may be called progressive, and when it happens upwards, retrograde;" and attributes the slipping of one piece of intestine within another solely

to some additional weight in the gut above. Again, Hunter says, "The outer fold is the only one which is active, the inverted portion being perfectly passive and squeezed down by the outer, which inverts more of itself."

Although these views are not received in the present day, the figures of two cases of intussusception, which Hunter gives, most accurately represent the disorder, and could not be improved upon. His treatment is curiously dominated by his views as to the action of the outer fold of the intussusception, for he says, "medicine can never come in contact with the outer fold," and he advises, therefore, giving vomits, "with a view to invert the peristaltic motion of the containing gut, which will have a tendency to bring the intestines into their natural situation." It is remarkable that neither inflation of the bowel from below, which dates from Hippocrates, nor the proposal of Praxagoras to open the abdomen and thus reach the seat of trouble, which in modern times has proved so successful, receives any mention in this essay.

John Hunter seems to have been the originator of the practice of feeding artificially through a stomach tube. He read before the Society for the Improvement of Medical and Chirurgical Knowledge on September 21, 1790, "A case of Paralysis of the Muscles of Degluti-

tion, cured by an artificial mode of conveying food and medicines into the stomach." The patient was a man of fifty, a hypochondriac who lost the power of swallowing, and was brought to Hunter for relief. Hunter proposed that a hollow flexible tube should be passed down into the stomach, and mentioned his having an instrument of the kind made of spiral wire covered with gut, for the purpose of injecting liquids into the stomachs of animals. The plan was adopted and the patient recovered. The instrument used was a fresh eel skin of rather small size, drawn over a probang, and at the end of the paper it is observed: "An eel skin seems very well adapted for this purpose, being smooth, pliable, and readily passed into the stomach; but as cases of this kind may occur when eels cannot be procured, a portion of the gut of any small animal, as a cat or lamb, will make a good substitute."

This same volume of the Society's "Transactions" contains a paper by Sir Everard Home "from materials furnished by Mr. Hunter." It is entitled, "Some Observations on the Loose Cartilages found in Joints," in which the view is maintained that the cartilages originate in blood-clots rather than in the loose fringes of the joint. Hunter advises the removal of such bodies by an incision above and to the inner side of the patella, and describes graphically

the extreme difficulty of the proceeding, owing to the tendency of the cartilages to escape into the cavity of the joint.

I have thus endeavoured to show by his own writings that John Hunter was an able and experienced surgeon as well as an unrivalled anatomist. That he had been for some years before his death the leading surgeon in London cannot be doubted, for even Jesse Foot allows this. He says, "I think I may affirm that his consultations were more in fashion than any other surgeon's, and that his range of practice was more extensive—that we heard more of the name of John Hunter than of any other surgeon."

Evidence of this kind is better than that which nowadays is too often looked upon as the test of professional success—the amount of probate duty. Hunter died a poor man, not because he did not make a large professional income, but because he spent all he made upon his museum. When he died in 1793 we find his influential friends exerting themselves to procure a grant for his widow from the government of the day; and eventually in 1799 Parliament voted £15,000 for John Hunter's Museum, and placed it under the care of the Corporation of Surgeons. The Royal College of Surgeons of England, the successor of that corporation, cannot be said to have failed in its

duty towards Hunter's collection, and the splendid series of museums which the College has erected during the present century, show the interest taken by the Council of this College in the promotion and advancement of the art and science of surgery.

It is now my duty, in compliance with the wishes of the founders of this Oration, to refer to those eminent Fellows of this College who have passed away since the last Oration. And first let me remind you of the tragical circumstances under which the Hunterian Oration of 1895 was delivered, the orator, Mr. Hulke, being then on his death-bed, and the oration being read to us by Mr. Bryant. The death of a President in office has fortunately been almost unknown—the only other example having been in 1831, when Mr. Headington died and was succeeded by Mr. Robert Keate.

John Whitaker Hulke was a schoolfellow of my own for a time, and when I passed on from the school into the Medical Department of King's College, I found him a third year's man and an out-patient dresser under Bowman. He became a Member of this College in 1852, a Fellow in 1857, and in 1859 gained the Jacksonian Prize, the subject being "The Morbid Changes in the Retina, with special reference to their recognition by the Ophthalmoscope"—an instrument with which Hulke

had early acquired great facility. He took office at the Moorfields Ophthalmic Hospital, and was for a time Assistant Surgeon to King's College Hospital; but when the Council of that institution developed their suicidal policy of restricted tenure of office, Hulke migrated to the Middlesex Hospital, of which he died the Senior Surgeon. Hulke was elected a Member of the Examining Board in Anatomy and Physiology in 1876, and of the Court of Examiners in 1880. In 1881 he became a Member of the Council, and in 1893 President, being re-elected to that office in 1894. He held the Arris and Gale Lectureship in this College from 1868 to 1871, and delivered the Bradshaw Lecture in 1891. Mention must also be made of the Bowman Lecture which Hulke delivered before the Ophthalmological Society, and in which he paid an eloquent tribute to the scientific attainments of his old master Sir William Bowman. Although so eminent as an ophthalmologist, Hulke steadfastly declined to be considered an oculist, and thus probably damaged his success as a practitioner, though his opinion on obscure eye-diseases was sought and appreciated by his professional brethren. He devoted much of his leisure time to the study of palæontology and geology, and was President of the Geological Society in 1883. A pathologist of the highest

standing, he became President of the Pathological Society of London in 1883, and of the Clinical Society in 1893, and had not completed his term of office. Hulke was not a prolific writer, but contributed several valuable surgical papers to the "Medico-Chirurgical Transactions;" in conjunction with Mr. Holmes he edited the third edition of "A System of Surgery." A learned, highly accomplished gentleman, Hulke was deeply regretted by those who had the pleasure of his friendship.

Foremost among these was *Sir William Savory*, upon whom Hulke's unexpected death had a most serious effect, and doubtless a direct influence in leading to his decease on March 4, 1895. A distinguished student of St. Bartholomew's Hospital, he early became a member of its teaching staff, and in due course held the offices of Assistant Surgeon and Surgeon, retiring as Senior Surgeon in 1891. He became a Member of this College in 1847, and a Fellow in 1852. In 1870 Savory, though not in the Council, was elected into the Court of Examiners, this being the first occasion on which the old routine was broken through.

As an examiner he did much to raise the standard, which had become very low in the hands of the ancients who had attained office by seniority; and though not a popular examiner he was known to be fair and without

crotchets. In 1877 Savory was elected into the Council, and held office until 1893, having filled the office of President for four consecutive years—an unprecedented occurrence. It fell to his lot while President to receive the Queen when she was pleased to lay the first stone of the Examination Hall of the United Colleges in 1886; and also H.R.H. the Prince of Wales, when he unveiled the statue of her Majesty in the same building. At both ceremonies Savory well maintained the dignity of his office, and his speech on the latter occasion lost nothing by following the eloquent periods of Sir Andrew Clark. In 1890 he was created a baronet.

Sir William Savory's position at this College was unique, since he alone held the office of President for four years. The period was a stormy one, for the Fellows and Members forming the Corporation then began to assert what they believed to be their rights to a share in the government of the College. It required a strong President to maintain order in the somewhat excited meetings which were assembled at the College; and when certain persons ventured to call a meeting unauthorised by the Council, Savory took measures to frustrate the effort. His name came prominently before the public as the defendant in an action brought against the President and Council by certain Members of the College, who eventually

were proved in the wrong, and were mulcted in the costs of their proceedings.

As a surgeon Savory was intensely conservative, and was inclined to regard the practice of St. Bartholomew's as the *ultima Thule* of scientific surgery. His address before the British Medical Association at Cork illustrated this, and his surgical lectures, though eloquent, were decidedly antiquated. He published little beyond a few cases in the "Medico-Chirurgical Transactions," and the Hunterian Oration which he delivered in 1887. None who were present on that occasion will fail to recall the delivery from memory of that eloquent address.

Arthur Durham died on May 7, 1895, after a short illness, aged sixty-one, thereby causing a vacancy in the Council of this College, to which he was elected in 1884. A distinguished student of Guy's Hospital, he lived to be its Senior Surgeon, from which post he retired a year before his death, to become one of the Consulting Staff. An excellent anatomist, he made many of the dissections used by Mr. John Hilton to illustrate his lectures on "Rest and Pain" delivered in this theatre in 1860-1. He became a Fellow of this College in 1860, being next in seniority to myself, and the friendship begun during that examination continued, I am happy to say, to the end, when as

President of the College I attended his funeral service. Energetic to a degree, Durham worked hard at his profession, and taught anatomy for many years most successfully. In 1876 he was appointed a Member of the Board of Examiners in Anatomy and Physiology of this College, and but for his unfortunate deafness he would doubtless have joined the Court of Examiners. As a surgeon he was careful, and yet enterprising. He early took up the study of the laryngoscope, and in 1870 contributed a very able article to Holmes's "System of Surgery," on the diseases of the larynx. His studies and practice in this department led him to invent a modified tracheotomy tube, and "Durham's tube" has been a well-known aid to surgery for many years. But Durham was a good all-round surgeon, and both in lithotomy and eolotomy displayed a dexterity which was remarkable, and he was the first to perform nephrectomy at Guy's Hospital.

Personally he was popular with his patients and his colleagues. At Guy's Hospital he was beloved by the students, in whose welfare he took a warm interest, and being a wealthy man he was able to aid them in various directions. A member of the Garrick Club, he was intimate with many members of the dramatic and musical professions, to whom he most

liberally gave professional assistance when required.

In *Sir John Erichsen*, who died in September last at the ripe age of seventy-eight, English surgery lost a representative man. Throughout the civilised world, and especially in the United States of America, "Erichsen's Surgery" has been for the last forty years the great textbook for the student and practitioner, and thanks to the labours of successive editors, it has fully maintained its position in the van of surgical progress. Erichsen though of Danish family was entirely educated in England, and was an Englishman in thought and feeling. A student of University College, London, in its early years, he was present at the opening of the hospital in 1834, when Liston and Samuel Cooper were the surgeons, and Richard Quain assistant surgeon. Here he filled the office of house surgeon under Cooper, and subsequently studied in Paris, where he witnessed Amussat's first colotomy in 1839. He became a Member of this College in 1839, and a Fellow by examination in 1845.

As a young man Erichsen worked at physiological subjects, and for a short time taught physiology at the Westminster Hospital. In 1845 he gained the Fothergillian gold medal of the Royal Humane Society for an "experimental inquiry into the nature and treatment

of asphyxia," which enabled him to speak with some authority when he became a member of the Royal Commission on vivisection in 1875.

At University College Hospital there was no opening for Erichsen until after the sudden death of Liston in 1847. In 1848 he and John Marshall were appointed assistant surgeons, and in 1850, after Syme had indignantly returned to Edinburgh and Arnott had resigned office, the council was glad to fall back upon Erichsen as an eminently safe man, and he was made professor of surgery and surgeon to the hospital in 1850. He proved to be an eloquent lecturer and a capable, painstaking surgeon, who though only thirty-two was able to hold his own with a turbulent class and an envious colleague. In 1853 was published the "Science and Art of Surgery," containing the substance of the lectures on surgery delivered by Erichsen in the three previous years, and admirably illustrated with woodcuts. This became rapidly the standard work on surgery both in Great Britain and America, and has been translated into most of the European languages. A somewhat left-handed compliment was paid to its author by the American Government, which, during the war of secession, printed a special edition and presented each of its army surgeons with a copy, but altogether

declined to make any compensation to the author.

Erichsen held the chair of surgery in University College for fifteen years, and was in 1866 succeeded by the late John Marshall, himself succeeding Mr. Quain as Holme Professor of Clinical Surgery. This post he held for ten years, resigning his charge of the wards in 1875, after having held them for exactly a quarter of a century. During that time fifty young men, beginning with Sir Henry Thompson, Sir Watkin Williams, one of Her Majesty's judges, and Sir Joseph Lister, whom we are all glad to salute as a medical peer, served under him as house-surgeons, many of whom have attained eminence and have held office in various hospitals. A marble bust presented by his old pupils and friends adorns the museum of University College alongside those of Liston and Quain ; and a *replica*, which many will remember in the dining-room of his house, has by Sir John's will become the property of this College.

In this College Sir John Erichsen attained the office of President in 1880, and presided at the Hunterian Festival of 1881 with dignity and success. Elected into the Council in 1869, he was foremost in proposing those meetings of the corporation which have proved not unmixed benefits, and the first of which

took place in 1870. After some years' experience of these meetings and their methods, Erichsen came down to one of them, and made a strong protest against the claims put forward on behalf of the Members of the College. This he subsequently expanded into a pamphlet entitled "The Member, the Fellow, and the Franchise" (Lewis, 1886), which I commend to those who wish to read the case, stated temperately and clearly by one who thoroughly understood the subject.

Erichsen was the recipient of numerous honours both at home and abroad. He was made a Fellow of the Royal Society somewhat late in life, was Surgeon Extraordinary to the Queen, and had been President of University College, London, since 1885. In 1895 he received a baronetcy, but as his wife, to whom he was devoted, had died previously, and he had no family, this was somewhat of a barren honour. Those who had the pleasure of Sir John Erichsen's acquaintance will agree with me in regarding him not merely as a leading surgeon of the nineteenth century, but also as an amiable, courteous gentleman, whom to know was to love.

Sir George Murray Humphry, who died the day after Sir John Erichsen, had for many years occupied the unique position of representing an ancient University *rebus in medicis*.

Humphry and Cambridge were so closely bound together for over half a century, that it was impossible to differentiate them, and one can hardly contemplate Addenbrooke's Hospital or the Anatomical Museum without the presence of that tall, thin body which contained a master mind. Born in 1820, Humphry became a pupil of the great Crosse of Norwich, and there learned lessons which served a lifetime. A student of St. Bartholomew's, he imbibed the traditions of that great hospital, and yet even in pupilage he was open to new ideas, for he told me once how astonished and delighted he had been at witnessing some operations by Fergusson, who had then recently come to London. He became a member of this College in 1841, and in the following year was appointed Surgeon to Addenbrooke's Hospital, and began his life's work at Cambridge. In 1844 Humphry was one of the second batch of Fellows of this College elected under the charter of 1843, being the youngest Fellow ever elected.

At Cambridge he worked and taught in the hospital, and soon gained considerable practice of all descriptions, for Humphry took all that came to him, and was ready to apply midwifery-forceps or treat pneumonia, as well as do more strictly surgical work. With a view to holding University office he became in 1847

a Fellow-Commoner of Downing, and graduated M.B. in 1852. In 1858 Humphry published his "Treatise on the Human Skeleton," which treated the subject philosophically, and was illustrated by the drawings of his wife. In 1866 he became Professor of Human Anatomy, and filled that chair with the greatest success until 1883, when he became Professor of Surgery without a salary. He had succeeded in practically rebuilding Addenbrooke's Hospital and in rehabilitating the Museum of Anatomy and Pathology, and thus was able to instruct the large classes of medical students which began to flock to Cambridge, if not for the whole of their medical education, at least for a great part of it. In 1869 Humphry was elected to represent his University in the General Medical Council, and he held the office for twenty years. In this College he became a member of Council in 1868, a member of the Court of Examiners from 1877 to 1888, and delivered the Hunterian Oration in 1879. As a counsellor and examiner he was most punctual in his attendance and careful in the discharge of his duties; and one could not but admire the pluck and determination which brought him up from Cambridge on five afternoons a week, for perhaps three weeks together, to return by a train which got him home about

1 A.M. with a morning lecture to be faced at nine.

Besides the offices which he filled in his own university, Humphry found time to be the first President of the Anatomical Society, in the work of which he took great interest, and to fill the chair for two years at the Pathological Society of London. He there presided at a memorable discussion on Phagocytosis and Immunity, which occupied three evenings in the spring of 1892, and his concluding remarks showed how thoroughly he had grasped a difficult subject, which he felt still required further elucidation. In January 1891, Humphry received the honour of knighthood, and in 1892, on the death of Sir George Paget, became the President of the Cambridge Graduates Club, and did much to forward its interests.

Of late years he had devoted much time and attention to the investigation of the changes in the skeleton due to old age, and these researches he embodied in a small volume on "Old Age" published in 1889. Although latterly in failing health he still took a lively interest in all professional matters, and was able to contribute an article on "Tetanus" to Professor Clifford Allbutt's "System of Medicine" published in 1896.

On the last day of January, *Sir Spencer*

Wells died at Antibes in his seventy-ninth year. So lately as last October Sir Spencer Wells attended the Council dinner, but it was felt then by his friends that his health was seriously shaken, and that neither his bodily nor mental powers were in their full vigour. Thomas Spencer Wells became a member of this College in 1841, and began his professional career in the Royal Navy. He was made a Fellow in 1844, became a member of Council in 1871, and President in 1882, when he was also Hunterian Orator.

The name of Spencer Wells must be inseparably connected with the operation of ovariectomy, for though the United States can claim the original ovariectomist in Ephraim McDowell so early as 1809, it is not too much to say that the operation, by which the lives of thousands of women have been prolonged in comfort, was not fully established as a surgical procedure until after 1858, when Wells took it up. Let us give Lizars, Hawkins, Bird, and Baker Brown all the credit they deserve as pioneers in a difficult and even dangerous career, but the fact still remains that the work done by Wells at the Samaritan Hospital placed the operation of ovariectomy on a firm basis. He began from the first to publish the details of each case with the result, whatever it might happen to be, and

from his position as editor of the *Medical Times and Gazette* he was able to secure a publicity for his records which soon attracted the attention of the profession both in this country and abroad. It would be futile now to discuss the details of these early operations, for Wells would have been the first to allow that he learnt by experience. Whether he was right in adopting Hutchinson's suggestion of clamping the pedicle outside the abdominal wall is now a matter of small moment, though at the time the practice appeared to have a marked effect in lowering the rate of mortality. Adopting, in later years, the details of Lister's antiseptic treatment, Wells abandoned the clamp in favour of the ligature, thereby conforming to the practice of most of the ovariologists who have succeeded him.

Probably the part of the operation in which Spencer Wells made the most important innovation, and in which he took a natural pride, was the bringing together of the two peritoneal edges of the wound. In his lectures, delivered in this theatre in 1878, he pointed out how, by the sacrifice of a few rabbits, he had been able to prove that immediate union of the divided serous membrane followed upon the proper application of sutures, with a marked improvement in his results when the practice was adopted upon patients. These few and

necessary experiments caused him to be abused by that small body of selfish enthusiasts who ignorantly strive to withstand the progress of scientific knowledge, much as Mrs. Partington resisted the waves of the Atlantic.

Spencer Wells did not, however, confine his attention to diseases of the ovaries and their treatment, but took an active part in that advance in abdominal surgery which has been such a remarkable feature of the last twenty years. The removal of uterine tumours, and then of the uterus itself, early engaged his attention, and in a work published in 1885 he gave his experience in this then novel department of surgery. He was the first British surgeon to remove an enlarged spleen, in 1865, and though all his three cases unfortunately were fatal, the operation proved successful in the hands of Péan two years later, and from his case we may date the introduction of splenectomy into modern surgery.

Sir Spencer Wells for many years filled the honourable post of Surgeon to the Queen's Household, resigning only last year on account of advancing age. In 1883 he received the honour of a baronetcy, which his position for years as one of the leading surgeons of the day fully justified.

Sir Spencer Wells was a highly cultivated gentleman, who spoke several foreign languages

and had been able to indulge his predilection for foreign travel, so that he was well known on the Continent, in America, and even in India. His hospitality at his beautiful home at Hampstead was well known, and on occasions such as the International Congress in 1881 he was surrounded by admirers from all parts of the globe. Certainly in the latter half of the nineteenth century Spencer Wells did much to support the credit of British surgery.



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